QUBICAAMF
THE POWER OF PARTNERSHIP

Aftermarket LCD Upgrade

Installation Guide

P/N 400-283-301 Revision A

Issue Date 4/27/2009

WORLDWIDE HEADQUARTERS
8100 AMF Drive - Mechanicsville, VA 23111 - USA
Tel: (804) 730-4000 - Fax: (804) 559-8650

EUROPEAN HEADQUARTERS
Via della Croce Coperta,15 - 40128 Bologna - Italy
Tel: +39 051.4192. 611 - Fax: +39 051.4192. 602

www.qubicaamf.com - info@qubicaamf.com

Aftermarket LCD Upgrade Manual Rev. A

Part Number 400-283-301

Summary of Changes

Change No.	ECR No.
Original	09-0112

List of Effective Pages

Page	Change No.	Effective Date
All	original	6/16/2009

ALL RIGHTS RESERVED

All rights to this installation guide including the diagrams, figures, and technical specifications are the property of QubicaAMF Bowling Products, Inc. Reproduction or transmission of any of the material contained in this manual without the prior written permission of QubicaAMF Bowling Products, Inc. is strictly prohibited. All of the product information in this guide was carefully prepared based on the latest information available and was believed to be correct at the time of printing. While every effort has been made to ensure accuracy, this publication may inadvertently contain typographical errors, inaccuracies, or errors of omission. QubicaAMF Bowling Products, Inc. cannot be held responsible for any claims resulting from these errors.

DOCUMENT UPDATES

QubicaAMF Bowling Products, Inc. reserves the right to revise and/or update this manual at any time without obligation to notify any person or entity of such revision. The document number, revision level, and date below indicate the edition of this manual.

TRADEMARK NOTICES

QubicaAMF and the QubicaAMF logo are the registered trademarks of QubicaAMF Bowling Products, Inc.

FCC NOTICE

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Copyright © 2009 QubicaAMF

Document # 400-283-301 Rev. A

Issued: 6/16/2009

Table of Contents

1 Introduction 7

2 Converting Scoring Overhead CRT's to LCD displays 7

3 Safety Precautions 10

3.1 Discharging the CRT Tube 10

3.2 Preparing Your Work Area 11

3.3 Removing Existing CRTs 11

3.1 Existing Hanger 12

4 Hanger Assembly and Monitor Hanging 12

4.1 Assemble Hanger – Single 15

4.2 Assemble Hanger – Double 16

4.3 Assemble Hanger – Triple 17

4.4 Monitor Hanger Parts List - Single 18

4.5 Monitor Hanger Parts List - Double 19

4.6 Overhead Monitor Specifications 20

4.7 Qubica Enclosure Parts List 21

4.8 Assemble Qubica Enclosure 22

4.9 Assemble C-90 Enclosure 23

4.10 Assemble Boss/XL Enclosure 24

4.11 Assemble Frameworx Enclosure 25

4.12 Enhanced TV Cable Installation 26

5 Component Identification 27

5.1 LCI S-Video Interface 27

5.1.1 Ferrite Filter Installation 27

5.2 Serial Monitor Control Box 28

6 Detailed Wiring Instructions 29

6.1 Power Control Accuscore +/ Qubica 29

6.2 Power Off with Conqueror 30

6.3 Brunswick Frameworx® Enhanced TV 30

7 Making the Right Connections 31
7.1 Accuscore Plus No TV / No Drink Light 32
7.2 AccuScore Plus (C-90) Existing Ads Channel TV 33
7.3 Accuscore Plus (C-90) Enhanced TV and Drink Light 34
7.4 Accuscore Plus (Spectrum) No TV 35
7.5 Accuscore Plus (Spectrum) Existing Ads Channel TV 36
7.6 Accuscore Plus (Spectrum) Enhanced TV 37
7.7 Qubica RGB Enhanced TV 38
7.8 Qubica RGB Maintain Existing TV 39
7.9 Qubica RGB No TV or Scoring Audio 40
7.10 Qubica S-Video No Monitor Power Control 41
7.11 Qubica S-Video No Sound No TV Power 42
7.12 Brunswick Frameworx® 43
8 Power Up & Verify Operation 44
8.1 LCD Screen Adjustments 44
8.1.1 S-Video 44
8.1.2 VGA (RGB) 46
8.1.3 Common Adjustments 47
9 Drink Light 48
10 Troubleshooting 49

1 Introduction

Congratulations on your purchase of this QubicaAMF Product. To begin, we will discuss the layout of this manual. Following this Introduction, the second section discusses what to expect from your upgrade to LCD displays, and important considerations you need to be aware of.

The next section, Safety Precautions, contains safety instructions and procedures necessary for the removal of existing equipment and installation of your new product.

The symbol is used to draw your attention to a safety precaution. Please pay special attention to anything following this symbol!

Read and understand all safety instructions and precautions before starting your work!

The next section pertains to assembly and installation of the QubicaAMF monitor support frame. You will then find sections devoted to detailed instructions for each type of scoring system supported by the LCI, followed by easy to find diagrams that will help you with wiring hookups. The final section is where you'll go once you are ready to power your system back up. You'll find steps to take prior to power-up and troubleshooting tips if something hasn't gone as expected.

2 Converting Scoring Overhead CRT's to LCD displays

Replacing scoring CRT monitors with LCD displays provides a significant improvement in readability and consistency of display. The conversion is simple and immediately improves the overall look of any scoring system.

LCD monitors are "fixed pixel" displays which can't suffer from mis-convergence, focus and color tracking problems so frequently seen in CRT displays. In addition, they don't rely on kilovolt power supplies, so they won't attract dirt to the screen.

There are also things an LCD can't do. It's important to be aware of these when contemplating a conversion.

1) LCD's can't increase the resolution of the picture. They can display the existing resolution in much finer detail and with greater clarity, but a 320x240 picture will remain a 320x240 picture enlarged to fit the LCD screen. The scoring display won't suddenly become High Definition because you installed a new monitor.

2) Bad video with hum, snow, sparkles and jitter will remain bad video with hum, snow, sparkles and jitter, displayed brighter and clearer than ever. Replacing the display isn't going to fix-up the bad video. You have to clean up the interference and noise and get rid of the hum to realize the full benefits of replacing the monitor.

3) Problems you might ignore on the old CRT like a minor flicker in the display will become quite annoying with the LCD. The barely noticeable twitch becomes a two-second blink if you don't clean up the signal.

Putting a new windshield in your car gives you a clearer view but it doesn't stop the wheel shimmy or the engine from burning oil. Be prepared to diagnose and repair the problems that become magnified by the new display.

Some things to check:

Number one on the list is GROUND connections. Connecting the monitor overhead to the building frame or the electrical conduit isn't acceptable. It will probably make things worse. The same goes for the scoring chassis/computer on the curtain wall. Both pieces of the system, overhead and curtain-wall, must be at the SAME GROUND POTENTIAL! Just running a protective earth ground to both pieces of equipment doesn't work, unless they tie together in the same panel. The display and scoring computer must be physically connected to the same ground with direct wires from the same ground terminal in the same panel. **Any** voltage difference between the overhead ground and the curtain-wall ground will cause current to flow in the video cabling. This is the number one source of display problems.

If the two systems are wired from separate panel boxes (or not supplied with the required isolated ground), run a heavy, #12 AWG minimum wire from the overhead frame directly to the scoring chassis. Make sure the connection isn't insulated by paint.

Check the routing of the video cable that runs from the curtain-wall to the overhead. While these are shielded cables, the shielding is only about 80% effective. Make sure the cables are routed far away from fluorescent lights, motors and solenoids at the machines and any other source of electrical noise. When these cables pick up electrical interference, CRT displays just show some noise in the picture while LCD monitors will probably blink off and back on.

Check the AC wiring to the overhead assembly. Neutral (the white or blue wire) is NOT THE SAME as the protective earth ground (the green or green/yellow wire). They are not interchangeable; they should NEVER CONNECT TOGETHER except at the first power entry panel. For North American plugs or receptacles, the neutral wire goes to the wide slot or prong and the protective earth goes to the long, rounded pin. Don't get them reversed. Lamps and fans may work but the scoring will have problems.

Older electrical systems often used the conduit or building frame for the protective ground. This isn't acceptable for scoring systems. Properly installed scoring power will have a green (or green/yellow) wire from the isolated ground screw on the outlet that powers the overhead (*you do have IG outlets don't you?*) to the isolated ground bus in the scoring

electrical panel. That same ground bus should have another green wire that extends to the ground connection on the IG outlet on the curtain-wall into which the scoring is plugged. While this isolated ground stuff may seem irrelevant for utilitarian wiring, it's very important for (especially older) scoring systems with remote video displays.

Don't plug other stuff into the scoring power. Fog machines, extreme lighting and fans or TVs often introduce currents into the system ground. **Keep scoring circuits for scoring only**.

3 Safety Precautions

3.1 Discharging the CRT Tube

The monitor's CRT (Cathode Ray Tube) must be discharged. Follow the steps below to discharge the CRT.

- CRT monitors use lethal high-voltage. Use caution when working around these tubes (especially around ladders).
- Read and understand all safety requirements when working on CRT monitors!
- Do not work on this product alone. Make certain another capable person is present to assist in the event of injury.
- To avoid electric shock, disconnect the power cord.
- CRT's retain hazardous voltages for long periods of time, even after the power has been removed. They may also build up a charge while disconnected.
- Place one hand behind your back. Placing one hand behind your back helps prevent current from passing through your heart (if you were to touch a high voltage area). If you are not comfortable with this procedure, consider contacting a local TV repair center.

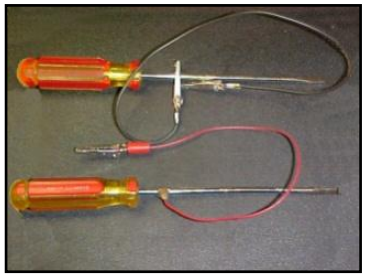


Figure 3 – Discharge Tools

The CRTs must be discharged by connecting a discharge path between ground and the anode. To do this, you will need an insulated screwdriver and wire with alligator clip(s). Connect the wire to the shaft of the screwdriver with a clip (Figure 3, top) or wrap the wire (Figure 3, bottom). Attach the alligator clip on the other end to something on the CRT with a good connection to the black conductive coating on the rear of the tube (i.e. - the brass connector (Figure 1) or the braided wire (Figure 2)).

Figure 1 – Brass Connector

Figure 2 – Braided Wire

Figure 4 – Discharging the Anode

Now, slide the flat head end of the screwdriver under the rubber cap and into the anode opening (Figure 4). You may or may not hear an electric crackle. The tube has now been discharged.

3.2 Preparing Your Work Area

You will need the following items:

- Scaffolding with wheels (to support 400lbs)
- Phillips head screwdriver
- Flat blade screwdriver
- 7/16, 1/2 inch open end wrenches
- Wire cutters
- Installation instructions
- Large piece of cardboard to place both CRT's

⚠ Assemble scaffolding according to manufacturer's directions. Position the scaffolding under the overhead to be changed out.

⚠ Make certain that the wheels have been locked before attempting to perform any work on the platform.

⚠ Before working on the monitors, make sure the power has been turned off.

Remove both monitor rear covers and place out of working area. Unplug the overhead AC plug at the side of the incoming power housing. Turn off the scoring unit.

Figure 5 - Scaffolding

3.3 Removing Existing CRTs

Unplug all AC power cables to both monitors and the Monitor control board AC Box. Unplug the video cables to both monitors and store out of the way for later use. If present, remove speaker cables and store for later use.

If you have not discharged the CRT, do so at this time!

For safety, position two or more people around the monitor. Pick up at rear of monitor and remove securing nut from stud while supporting monitor. Lift front of monitor out of slot in housing.

⚠ **DO NOT** support the monitor using the front bezel (if assembled). The screws can break off resulting in a dropped monitor!

⚠ **DO** Support monitor from the bottom.

Carefully lower the monitor from the scaffold and place front down on a piece of cardboard. Repeat this step for the other monitor.

3.1 Existing Hanger

Make certain at least two people are available to support the hanger. Open the quick links on one side and carefully remove the hanger from the chain support. Repeat on the other side and lower cautiously to the floor, out of the way.

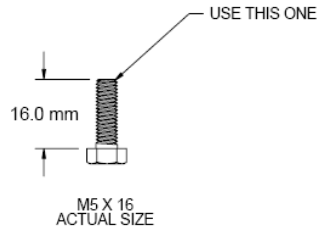
4 Hanger Assembly and Monitor Hanging

WARNING!

32" OR 42" LCDs WITHOUT A METAL PLATE ON THE BACK REQUIRE METRIC HARDWARE!

THE METRIC HARDWARE MUST BE THE CORRECT LENGTH OR DAMAGE WILL OCCUR. HARDWARE PACKET 283-200-189 IS PROVIDED WITH THE ORDER OR WILL BE PROVIDED IN THE OVERHEAD FRAME CARTON.

THE ACTUAL SIZE OF THE HARDWARE IS PROVIDED BELOW

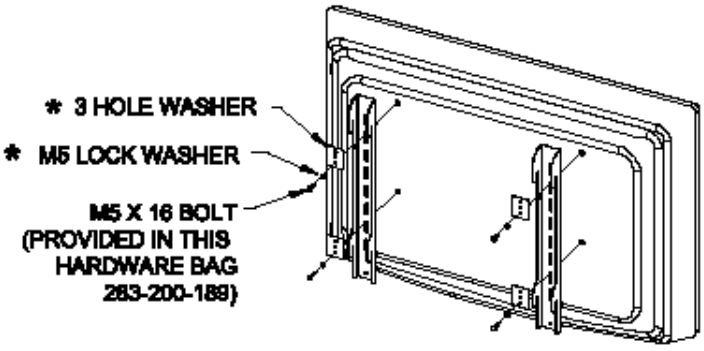


If your scoring system uses S-video cabling, it is strongly recommended you make this connection prior to installing the hanger bracket to the rear of the monitor.

The correct tool to use for this hardware is an 8MM nut driver. **Use caution when tightening monitor hanger hardware! Over-tightening can cause severe damage.** Refer to the Hanger Assembly instructions and the warning on the next page for more information.

CONDITION #1
LCD WITHOUT METAL PLATE

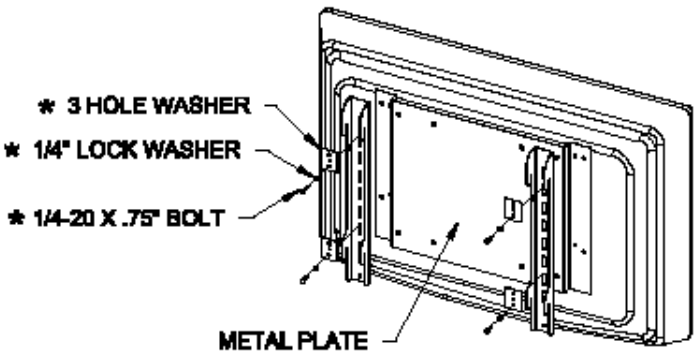
REQUIRE M5 X 16 BOLTS FROM
KIT 283-200-189.
THIS APPLIES TO 32"/42" LCD



* HARDWARE IS PROVIDED IN
OVERHEAD FRAME KITS.

CONDITION #2
LCD WITH METAL PLATE

REQUIRE 1/4-20 X .75" BOLTS
FROM OVERHEAD FRAME KITS
283-200-115 / 283-200-120

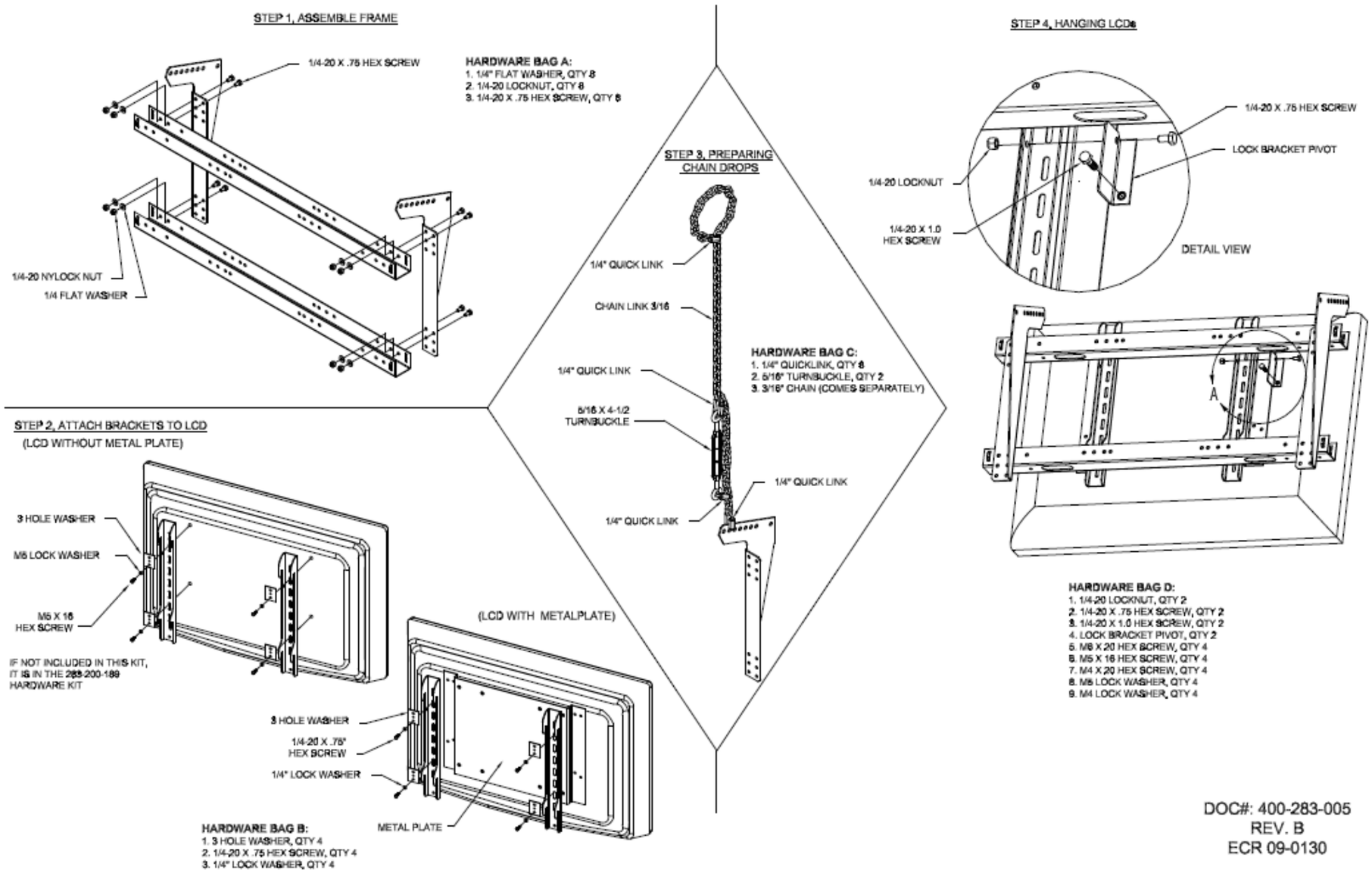


THE 283-200-189 KIT COMES
WITH THE FOLLOWING:

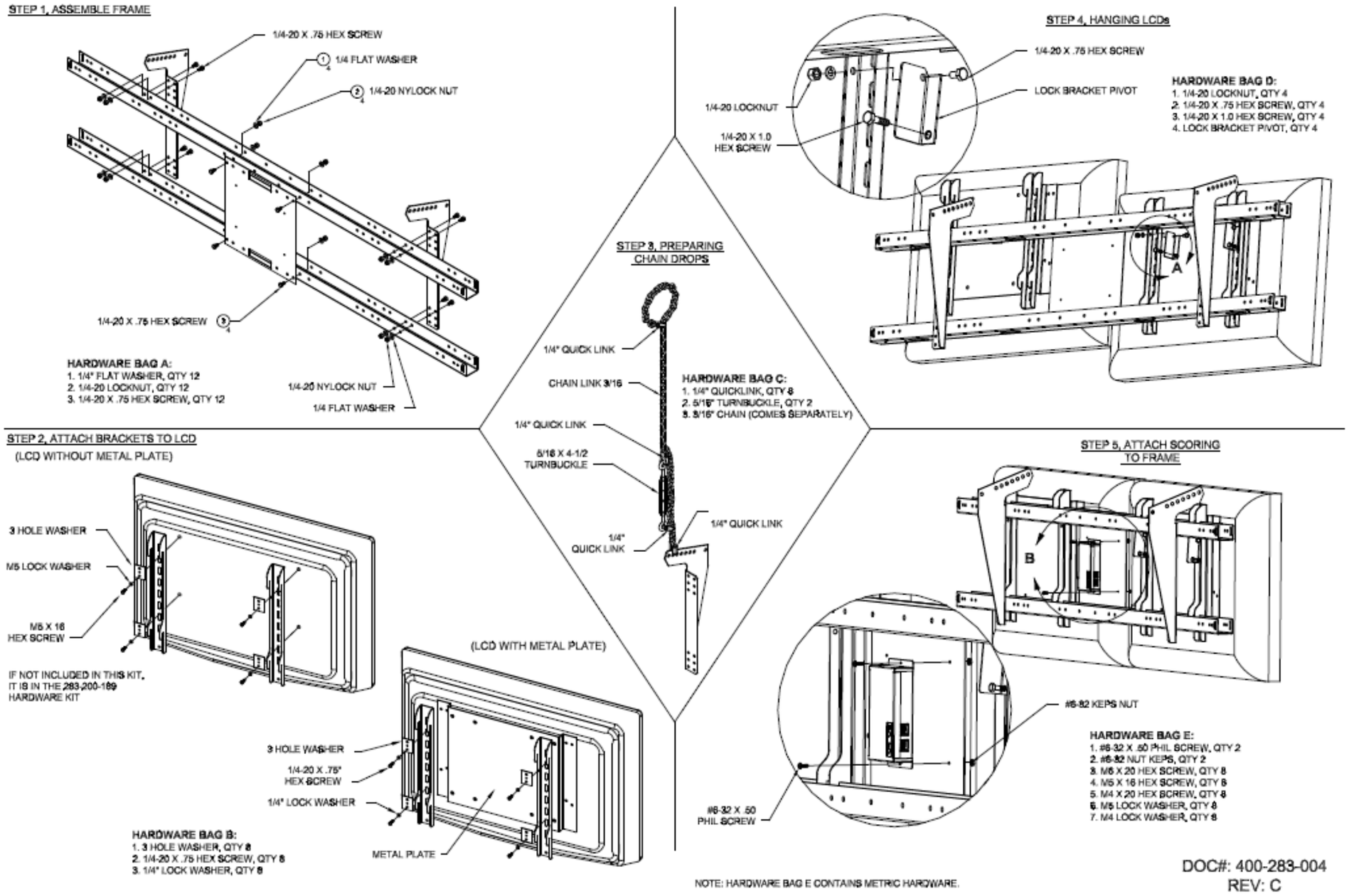
1. INSTRUCTIONS 400-283-310, QTY. 1
2. M5-0.8 X 16 HEX HD BOLT 961-500-160, QTY. 8

ASSEMBLY INSTRUCTIONS
FOR LCD METRIC HARDWARE BAG
400-283-310
ECR 09-0130

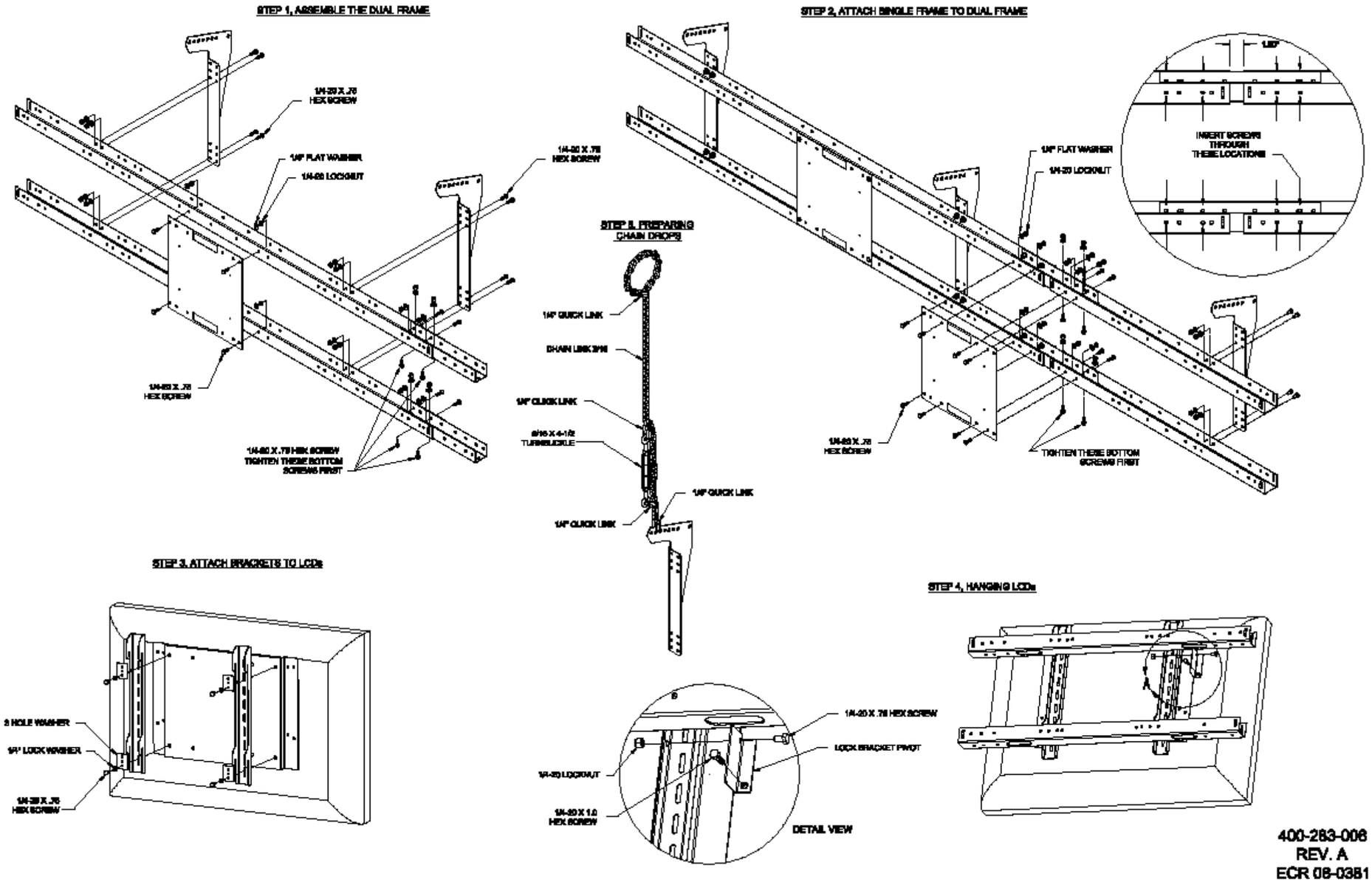
4.1 Assemble Hanger – Single



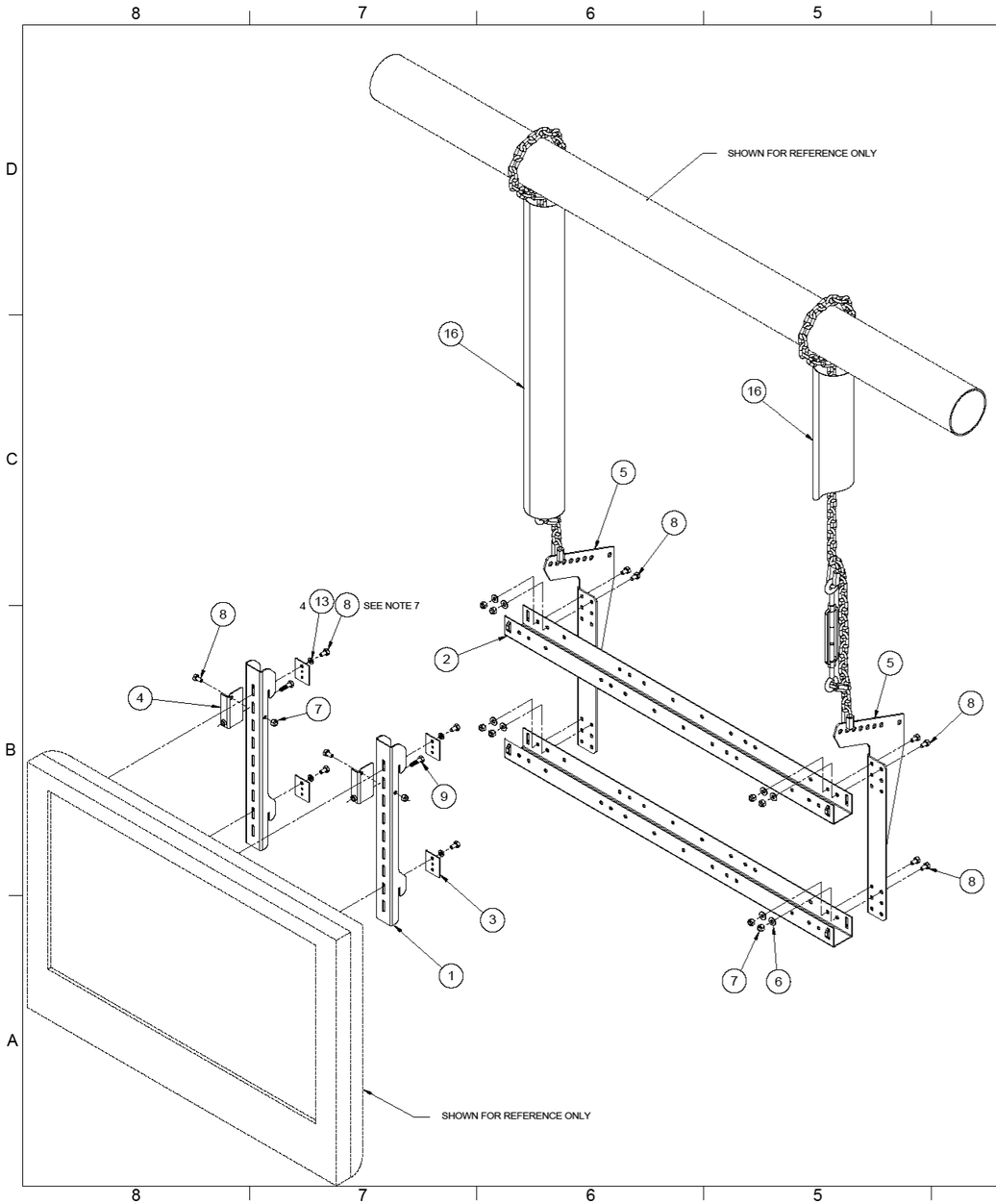
4.2 Assemble Hanger – Double

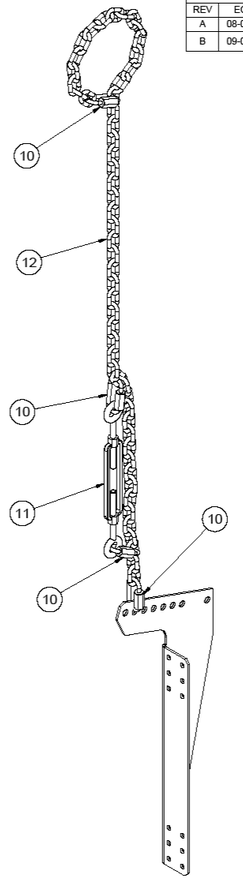


4.3 Assemble Hanger – Triple



4.4 Monitor Hanger Parts List - Single





REVISIONS						
REV	ECR	DESCRIPTION	DATE	BY	CHECKED	ENG APP
A	08-0216	PRODUCTION RELEASE	08/01/08	NS	ADS	FGK
B	09-0130	REVISED ITEM #5. ADDED ITEM #21. REPLACED 861-500-207 WITH 861-500-160	04/14/09	NS	DBA	FGK

NOTES:

1. MATERIAL: SEE PARTS LIST.
2. HARDWARE IS TO BE PACKAGED IN THE FOLLOWING GROUPS. ALL HARDWARE BAGS SHOULD BE PLACED IN ONE PLASTIC BAG.

   BAG LABELED A:
   -ITEM 6, QTY. 8
   -ITEM 7, QTY. 8
   -ITEM 8, QTY. 8

   BAG LABELED B:
   -ITEM 8, QTY. 4
   -ITEM 3, QTY. 4

   BAG LABELED C:
   -ITEM 10, QTY. 8
   -ITEM 11, QTY. 2

   BAG LABELED D:
   -ITEM 4, QTY. 2
   -ITEM 7, QTY. 2
   -ITEM 8, QTY. 2
   -ITEM 9, QTY. 2
   -ITEM 14, QTY. 4
   -ITEM 17, QTY. 4
   -ITEM 18, QTY. 4
   -ITEM 19, QTY. 4
   -ITEM 20, QTY. 4

3. PLACE BRACKETS, HARDWARE BAG, AND INSTRUCTIONS, ITEM #15, IN BOX. PARTS ARE TO BE PROTECTED FROM DAMAGE.
4. PALLET AND LABEL SHOULD BE MADE ACCORDING TO QUBICAAMF PALLET AND LABEL SPECIFICATIONS.
5. LABEL SHOULD CONTAIN:
   - "283200115" AND BARCODE.
   - "1" AND BARCODE IN QUANTITY LOCATION.
   - P.O. NUMBER AND BARCODE.
   - "REV A" IN REVISION LOCATION.
   - "OVERHEAD FRAME SINGLE" IN NAME LOCATION.
6. VENDOR TO PROVIDE PACKAGING. PACKAGING TO WITHSTAND THE TYPICAL HANDLING REQUIREMENTS FOR INTERNATIONAL SHIPMENTS.
7. HARDWARE ITEMS 14, 17, 18, 19, AND 20 ARE PROVIDED FOR METRIC APPLICATIONS.

ITEM	QTY	PART NUMBER	DESCRIPTION
21	1	400-283-312	WARNING SHEET
20	4	785-502-203	M4 SPLIT LOCK WASHER
19	4	785-502-206	M5 X 1.2 SPLIT LOCK WASHER
18	4	861-400-207	M4 X 20 HEX HD CAP SCREW
17	4	861-500-160	M5 X 16 HEX HD CAP SCREW
16	REF	286-003-029	BLACK CHAIN COVER
15	1	400-283-005	INSTALLATION INSTRUCTIONS
14	4	709-013-065	M6 X 20 HEX CAP SCREW
13	4	951-148-008	1/4 MEDIUM LOCK WASHER
12	REF	HW250	CHAIN 3/16
11	2	HW252	TURN BUCKLE 5/16 X 4
10	8	HW251	QUICK LINK 1/4"
9	2	809-849-165	1/4-20 X 1.0 HEX CAP SCREW, GRD 8
8	14	809-849-125	1/4-20 X .75 HEX CAP SCREW, GRD 8
7	10	703-600-252-0000	1/4-20 NUT NYLON INSERT, L/N ZINC
6	8	948-753-102	1/4 SAE FLAT WASHER
5	2	283-200-151	BRACKET
4	2	283-200-134	LOCK BRACKET PIVOT
3	4	283-200-131	3 HOLE WASHER
2	2	283-200-157	HORIZONTAL U CHANNEL SINGLE
1	2	283-200-119	MONITOR HANGING BRACKET

PARTS LIST

NOTICE: QubicaAMF CONFIDENTIAL INFORMATION THIS DOCUMENT IS THE PROPERTY AND CONTAINS CONFIDENTIAL INFORMATION OF QubicaAMF. THIS DOCUMENT MAY NOT BE COPIED NOR THE INFORMATION USED OR DISCLOSED TO ANYONE EXCEPT WITH PRIOR WRITTEN WRITING. ACCEPTANCE OF THIS DOCUMENT BY A VENDOR INDICATES VENDOR'S AGREEMENT TO RECEIVE SUCH INFORMATION IN CONFIDENCE, TO NOT DISCLOSE IT AND TO USE IT ONLY ON BEHALF OF QubicaAMF.

ENG APP	FKG	08/01/08	
CHECKED	ADS	08/01/08	
DRAWN BY	NS	07/07/08	

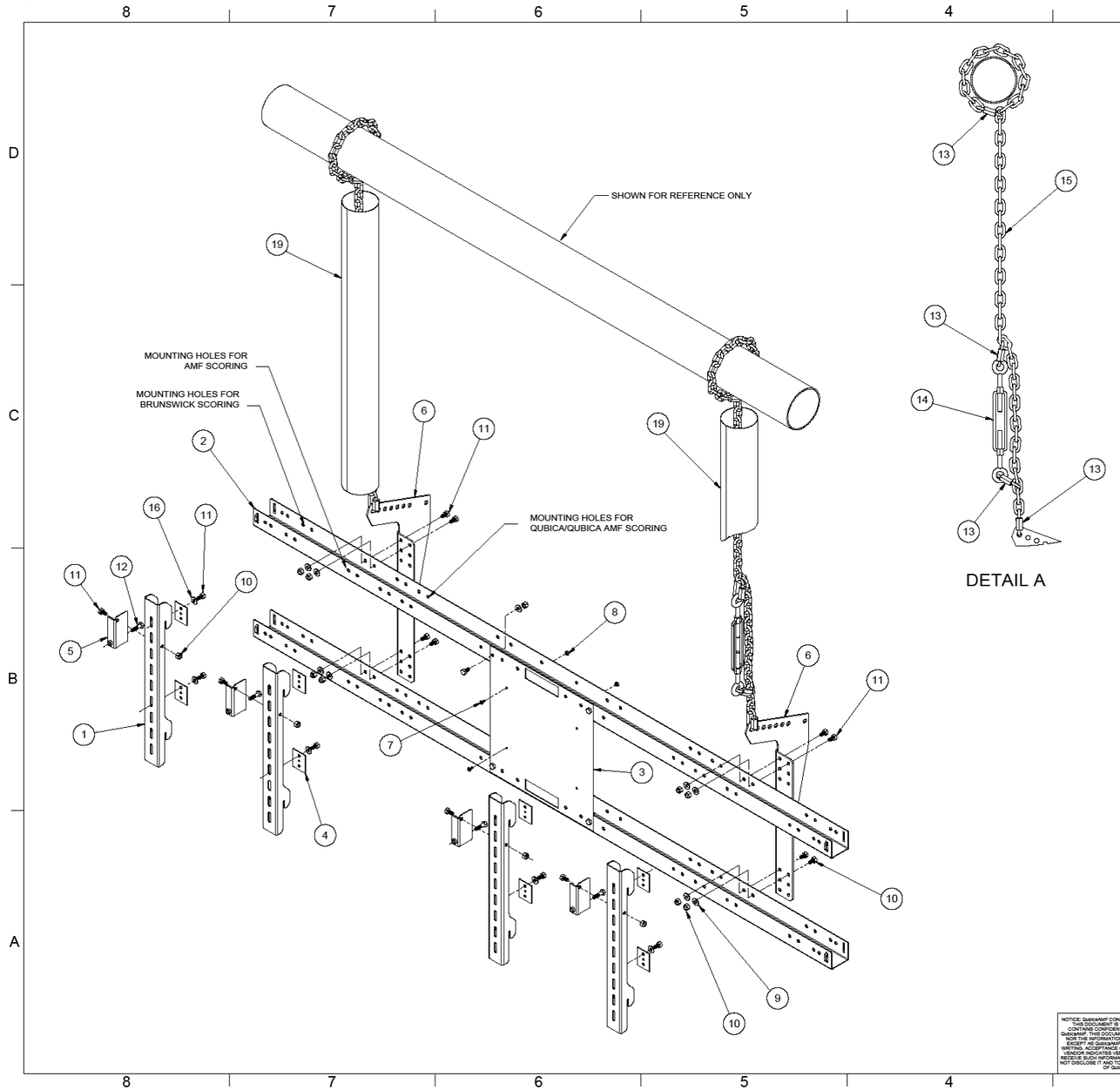
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
GENERAL TOLERANCES
XX ± | XXX ± | ∠ ±

THIRD ANGLE PROJECTION — INTERPRET DRAWING IN ACCORDANCE WITH ASME Y14.5M-1994

QUBICAAMF

DESCRIPTION: SINGLE OHM FRAME
SIZE: D
PART NUMBER: 283-200-115
REV: B
ELECTRONIC DOCUMENT. DO NOT SCALE THIS DRAWING
SHEET: 1 OF 1
REV C

4.5 Monitor Hanger Parts List - Double



DETAIL A

REVISIONS						
REV	ECR	DESCRIPTION	DATE	BY	CHECKED	ENG APP
A	08-0050	PRODUCTION RELEASE	05/02/08	NS	ADS	FGK
B	08-0241	UPDATED PARTS LIST	08/01/08	NS	ADS	FGK
C	08-0374	REVISED 283-200-128	03/25/09	NS	ADS	FGK
D	09-0130	REPLACED 861-500-207 WITH 861-500-160. ADDED ITEM #24. REVISED ITEMS 3 & 6	04/14/09	NS	DBA	FGK

NOTES:

1. MATERIAL: SEE PARTS LIST.
2. HARDWARE IS TO BE PACKAGED IN THE FOLLOWING GROUPS. ALL HARDWARE BAGS SHOULD BE PLACED IN ONE PLASTIC BAG.

   BAG LABELED A:
   -ITEM 11, QTY. 12
   -ITEM 10, QTY. 12
   -ITEM 9, QTY. 12

   BAG LABELED B:
   -ITEM 11, QTY. 8
   -ITEM 16, QTY. 8
   -ITEM 4, QTY. 8

   BAG LABELED C:
   -ITEM 14, QTY. 2
   -ITEM 13, QTY. 8

   BAG LABELED D:
   -ITEM 12, QTY. 4
   -ITEM 10, QTY. 4
   -ITEM 11, QTY. 4
   -ITEM 5, QTY. 4

   BAG LABELED E,, MISC.:
   -ITEM 8, QTY. 2
   -ITEM 7, QTY. 2
   -ITEM 17, QTY. 8
   -ITEM 20, QTY. 8
   -ITEM 21, QTY. 8
   -ITEM 22, QTY. 8
   -ITEM 23, QTY. 8

3. PLACE BRACKETS, HARDWARE BAG, AND INSTRUCTIONS, ITEM #18, IN BOX. PARTS ARE TO BE PROTECTED FROM DAMAGE.
4. PALLET AND LABEL SHOULD BE MADE ACCORDING TO QUBICAAMF PALLET AND LABEL SPECIFICATIONS.
5. LABEL SHOULD CONTAIN:
   - "283200120" AND BARCODE.
   - "1" AND BARCODE IN QUANTITY LOCATION.
   - P.O. NUMBER AND BARCODE.
   - "REV C" IN REVISION LOCATION.
   - "OVERHEAD FRAME" IN NAME LOCATION.
6. VENDOR TO PROVIDE PACKAGING. PACKAGING TO WITHSTAND THE TYPICAL HANDLING REQUIREMENTS FOR INTERNATIONAL SHIPMENTS.

	ITEM	QTY	PART NUMBER	DESCRIPTION
	24	1	400-283-310	WARNING SHEET
	23	8	785-502-206	M5 SPLIT LOCK WASHER
	22	8	785-502-203	M4 SPLIT LOCK WASHER
	21	8	861-500-160	M5 X16 HEX HD BOLT
	20	8	861-400-207	M4 X 20 HEX HD BOLT
	19	REF	286-003-029	BLACK CHAIN COVER
SEE NOTE 3	18	1	400-283-004	INSTALLATION INSTRUCTIONS
	17	8	709-013-065	M6 X 20 HEX CAP SCREW
	16	8	951-148-008	1/4 MEDIUM LOCK WASHER
	15	REF	HW250	CHAIN 3/16
	14	2	HW252	TURN BUCKLE 5/16 X 4
	13	8	HW251	QUICK LINK 1/4"
	12	4	809-849-165	1/4-20 X 1.0 HEX CAP SCREW, GRD 8
	11	24	809-849-125	1/4-20 X .75 HEX CAP SCREW, GRD 8
	10	16	01051	1/4-20 NUT NYLON INSERT, LN ZINC
	9	12	948-753-102	1/4 SAE FLAT WASHER
	8	2	843-127-002	#6-32 NUT KEPS
	7	2	818-227-082	#6-32 X .50 PHIL RD M/S ZINC SEMS SCREW
	6	2	283-200-151	BRACKET
	5	4	283-200-134	LOCK BRACKET PIVOT
	4	8	283-200-131	3 HOLE WASHER
	3	1	283-200-128	SPACER PLATE
	2	2	283-200-124	HORIZONTAL U CHANNEL
	1	4	283-200-119	MONITOR HANGING BRACKET

PARTS LIST

NOTICE: QubicaAMF CONFIDENTIAL INFORMATION THIS DOCUMENT IS THE PROPERTY AND CONTAINS CONFIDENTIAL INFORMATION OF QUBICAAMF. THIS DOCUMENT MAY NOT BE COPIED OR DISCLOSED TO ANY THIRD PARTY WITHOUT EXCEPT AS QubicaAMF FIRST AUTHORIZES IN WRITING. ACCEPTANCE OF THIS DOCUMENT BY A VENDOR INDICATES VENDOR'S AGREEMENT TO RECEIVE SUCH INFORMATION IN CONFIDENCE, TO NOT DISCLOSE IT TO OTHERS, AND TO USE IT ONLY ON BEHALF OF QUBICAAMF.

ENG APP	FGK	05/12/08	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	DESCRIPTION: DUAL OHM FRAME
CHECKED	ADS	05/12/08	GENERAL TOLERANCES: XX ±, XXX ±, ∠ ±	SIZE: D; PART NUMBER: 283-200-120; REV: D
DRAWN BY	NS	05/02/08	THIRD ANGLE PROJECTION	QUBICAAMF; ELECTRONIC DOCUMENT, DO NOT SCALE THIS DRAWING; SHEET: 1 OF 1

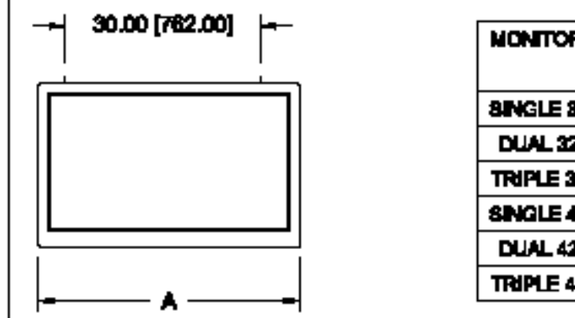
INTERPRET DRAWING IN ACCORDANCE WITH ASME Y14.5M-1994

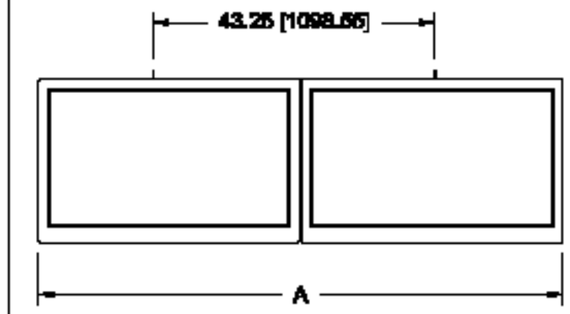
REV D

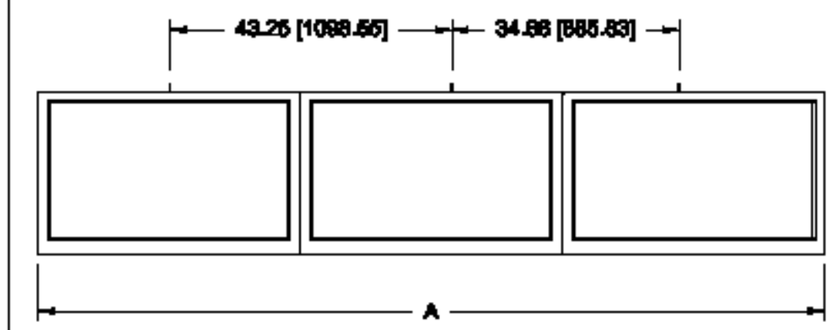
4.6 Overhead Monitor Specifications

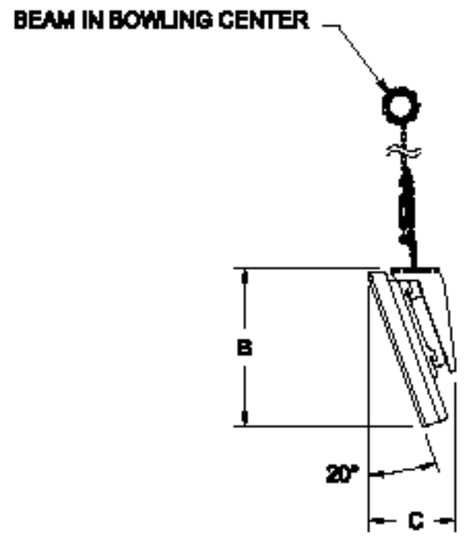
ACCUVISION OVERHEAD MONITOR SPECIFICATIONS

MONITOR TYPE	DIM "A"	DIM "B"	DIM "C"	WEIGHT	
				LCD ONLY	LCD W/ FRAME
SINGLE 32" LCD	31.25" / 793.75mm	19.60" / 497.85mm	13.00" / 330.19mm	26 lbs / 11.8 Kg	44 lbs / 19.9 Kg
DUAL 32" LCD	62.70" / 1592.58mm	19.60" / 497.85mm	13.00" / 330.19mm	(26 lbs / 11.8 Kg) x 2	84.0 lbs / 38.1 Kg
TRIPLE 32" LCD	93.95" / 2386.33mm	19.60" / 497.85mm	13.00" / 330.19mm	(26 lbs / 11.8 Kg) x 3	134.8 lbs / 61.1 Kg
SINGLE 42" LCD	40.13" / 1019.18mm	24.68" / 626.82mm	13.48" / 342.45mm	43 lbs / 19.5 Kg	61.0 lbs / 27.7 Kg
DUAL 42" LCD	80.45" / 2043.43mm	24.68" / 626.82mm	13.48" / 342.45mm	(43 lbs / 19.5 Kg) x 2	116.0 lbs / 53.5 Kg
TRIPLE 42" LCD	120.57" / 3062.80mm	24.68" / 626.82mm	13.48" / 342.45mm	(43 lbs / 19.5 Kg) x 3	185.8 lbs / 84.3 Kg





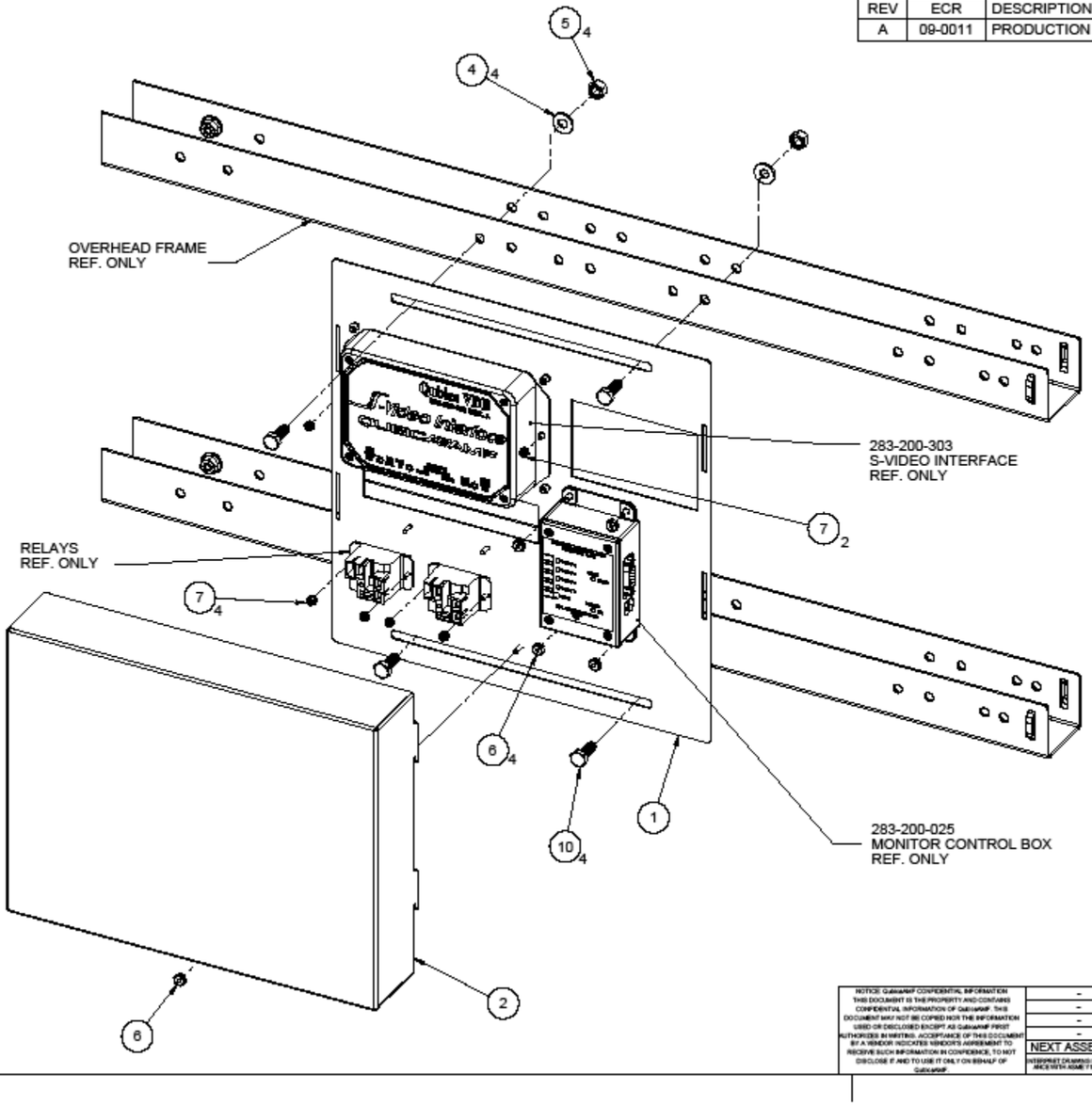




PAGE 1 OF 3

4.7 Qubica Enclosure Parts List

REVISIONS						
REV	ECR	DESCRIPTION	DATE	BY	CHECKED	ENG APP
A	09-0011	PRODUCTION RELEASE	04/03/09	NS		FGK



NOTES:

1. PLACE ALL HARDWARE (ITEMS #3 THRU #8) INTO PLASTIC BAG.
2. PLACE ENCLOSURE BASE (ITEM #1), ENCLOSURE COVER (ITEM #2), AND HARDWARE BAG IN BOX. PARTS ARE TO BE PROTECTED FROM DAMAGE.
3. PALLET AND LABEL SHOULD BE MADE ACCORDING TO QUBICAAMF PALLET AND LABEL SPECIFICATIONS.
4. LABEL SHOULD CONTAIN:
   - "283200186" AND BARCODE.
   - "1" AND BARCODE IN QUANTITY LOCATION.
   - P.O. NUMBER AND BARCODE.
   - "REV A" IN REVISION LOCATION.
   - "ENCLOSURE KIT" IN NAME LOCATION.
5. VENDOR TO PROVIDE PACKAGING. PACKAGING TO WITHSTAND THE TYPICAL HANDLING REQUIREMENTS FOR INTERNATIONAL SHIPMENTS.

ITEM	QTY	PART NUMBER	DESCRIPTION
9	1	400-283-308	INSTALLATION INSTRUCTIONS
8	4	818-227-062	#6-32 X .375 PHIL RD SEMS SREW
7	6	843-121-002	#4-40 KEPS NUT
6	5	843-127-002	#6-32 KEPS NUT
5	4	01-051	1/4-20 NUT NYLOCK, LN ZINC
4	4	948-753-102	1/4 SAE FLAT WASHER
3	4	809-849-125	1/4-20 X .75 HEX CAP SCREW
2	1	283-200-183	ENCLOSURE, COVER
1	1	283-200-184	ENCLOSURE, BASE

PARTS LIST

NEXT ASSEMBLY

ENG APP: FGK 04/07/09 | CHECKED: - - | DRAWN BY: NS 04/03/09

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. GENERAL TOLERANCES: XX ±, XXX ±, ∠ ±

QUBICAAMF

DESCRIPTION: ENCLOSURE KIT

PART NUMBER: 283-200-186 REV A

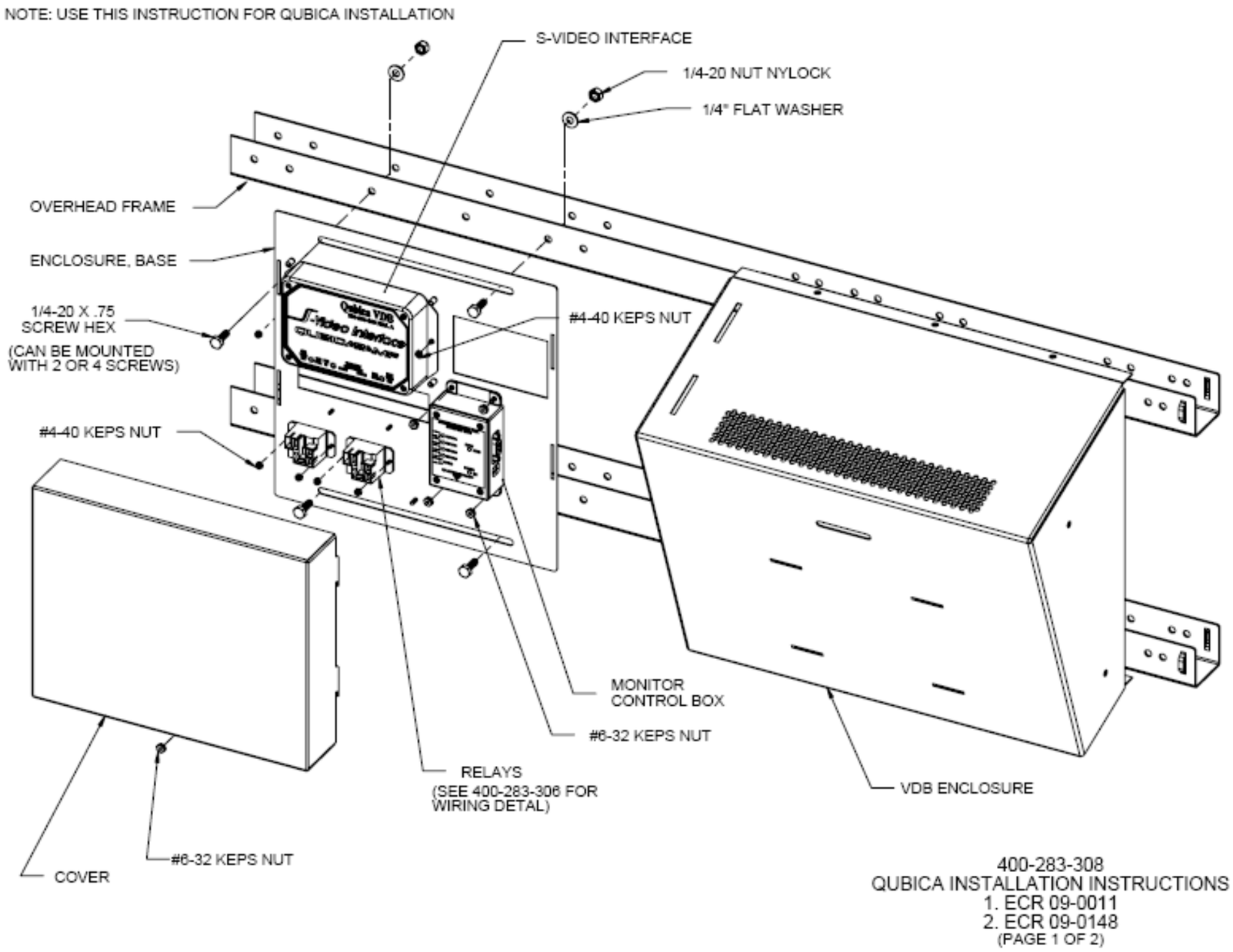
SIZE B

ELECTRONIC DOCUMENT DO NOT SCALE THIS DRAWING

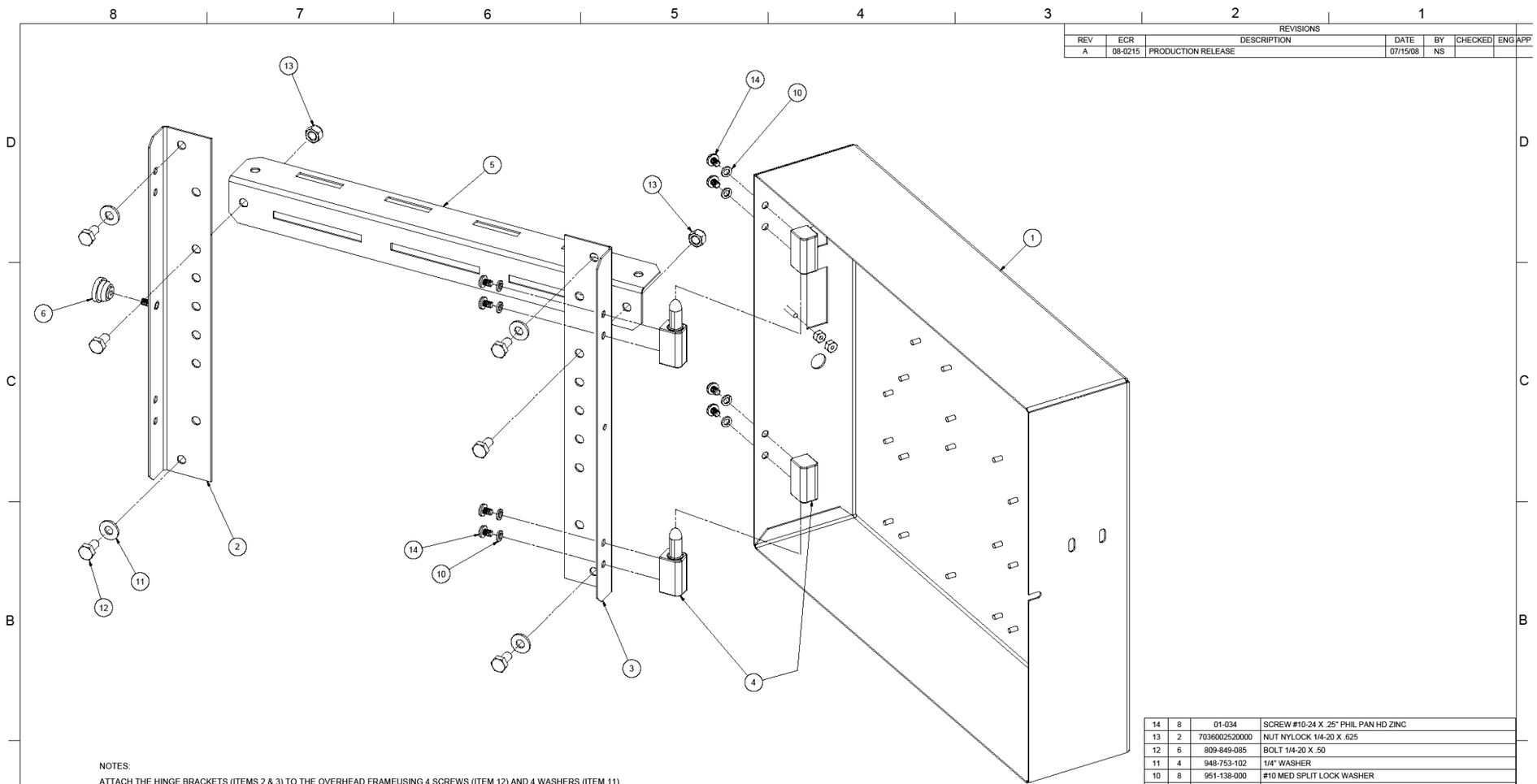
SHEET: 1 OF 1

REV D

4.8 Assemble Qubica Enclosure



4.9 Assemble C-90 Enclosure



REVISIONS							
REV	ECR	DESCRIPTION	DATE	BY	CHECKED	ENG APP	
A	08-0215	PRODUCTION RELEASE	07/15/08	NS			

NOTES:

ATTACH THE HINGE BRACKETS (ITEMS 2 & 3) TO THE OVERHEAD FRAMEUSING 4 SCREWS (ITEM 12) AND 4 WASHERS (ITEM 11).
THE HINGE BRACKET (ITEM 2) SHOULD BE ON THE LEFT SIDE AS SHOWN IN THE PICTURE.

ATTACH THE OUTLET BRACKET (ITEM 5) TO THE HINGE BRACKETS (ITEMS 2 & 3) USING 2 SCREWS (ITEM 12) AND 2 NUTS (ITEM 13).

MOUNTING THE HINGE PINS (ITEM 4) TO THE HINGE BRACKETS (ITEMS 2 & 3) USING 4 SCREWS (ITEM 14) AND 4 LOCK WASHERS (ITEM 10).
THE HINGE KNUCKLES (ITEM 4) WILL BE MOUNTED ON THE ELECTRICAL ENCLOSURE (ITEM 1) USING SAME 4 SCREWS AND WASHERS.

ITEM	QTY	PART NUMBER	DESCRIPTION
14	8	01-034	SCREW #10-24 X .25" PHIL PAN HD ZINC
13	2	7036002520000	NUT NYLOCK 1/4-20 X .625
12	6	809-849-085	BOLT 1/4-20 X .50
11	4	948-753-102	1/4" WASHER
10	8	951-138-000	#10 MED SPLIT LOCK WASHER
9	10	843-127-002	NUT #6-32
8	8	818-227-042	SCREW #6-32 X .25 PHIL PAN HD SEMS
7	8	722-502-077	STANDOFF #6-32 X .50 FEMALE/FEMALE
6	1	713-504-013	BLACK PLASTIC KNURLED KNOB
5	1	283-200-078	OUTLET BRACKET
4	2	283-200-074	HINGE ASSEMBLY
3	1	283-200-057-01	HINGE BRACKET WITHOUT HARDWARE
2	1	283-200-057	HINGE BRACKET
1	1	283-200-056	ELECTRICAL ENCLOSURE

PARTS LIST

NOTICE: QubicaAMF CONFIDENTIAL INFORMATION
THIS DOCUMENT IS THE PROPERTY AND CONTAINS CONFIDENTIAL INFORMATION OF QUBICAAMF. NEITHER THIS DOCUMENT NOR THE INFORMATION USED OR DISCLOSED EXCEPT AS QubicaAMF FIRST AUTHORIZES IN WRITING, ACCEPTANCE OF THIS DOCUMENT BY A RECIPIENT CONSTITUTES AGREEMENT TO RECEIVE SUCH INFORMATION IN CONFIDENCE, TO NOT DISCLOSE IT AND TO USE IT ONLY ON BEHALF OF QubicaAMF.

ENG APP	-	-	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
CHECKED	-	-	GENERAL TOLERANCES: XX ±.1, XXX ±.01, ∠ ±1°
DRAWN BY	NS	07/15/08	SIZE D

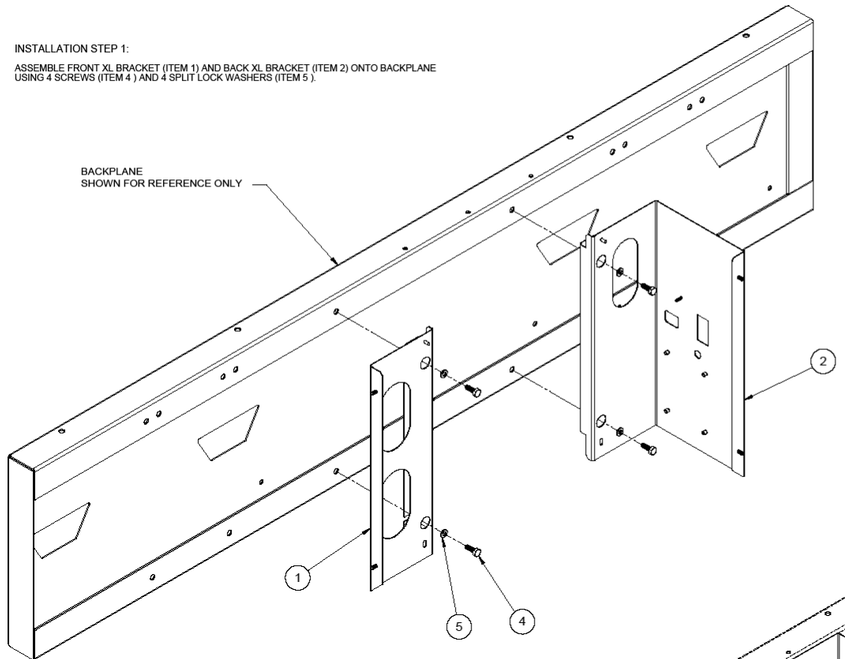
DESCRIPTION: C90 ELECTRICAL ENCLOSURE KIT
PART NUMBER: 283-200-065 REV A
INTERPRET DRAWING IN ACCORDANCE WITH ASME Y14.5M-1994
THIRD ANGLE PROJECTION
QUBICAAMF
ELECTRONIC DOCUMENT DO NOT SCALE THIS DRAWING
SHEET: 1 OF 1
REV C

4.10 Assemble Boss/XL Enclosure

REVISIONS						
REV	ECR	DESCRIPTION	DATE	BY	CHECKED	ENG APP
A	08-0214	PRODUCTION RELEASE	07/21/08	NS		

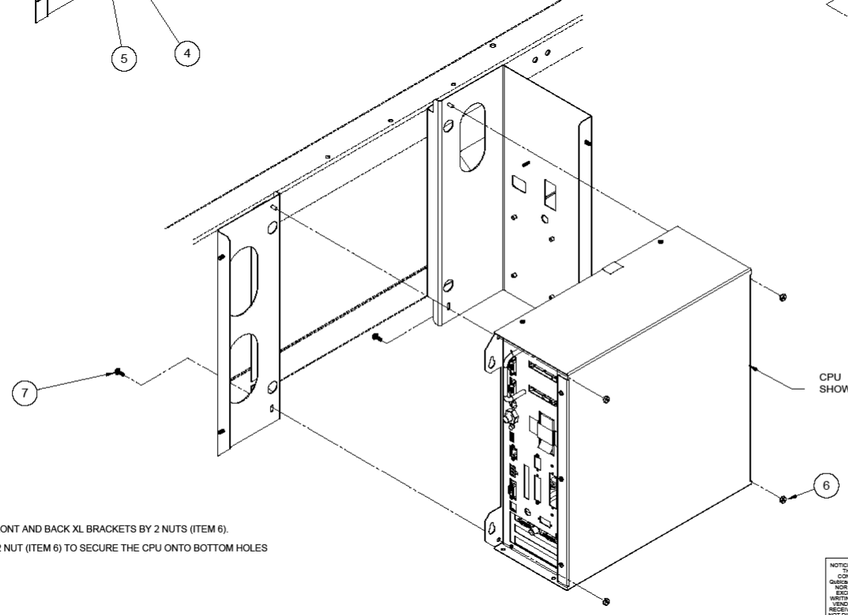
INSTALLATION STEP 1:

ASSEMBLE FRONT XL BRACKET (ITEM 1) AND BACK XL BRACKET (ITEM 2) ONTO BACKPLANE USING 4 SCREWS (ITEM 4) AND 4 SPLIT LOCK WASHERS (ITEM 5).



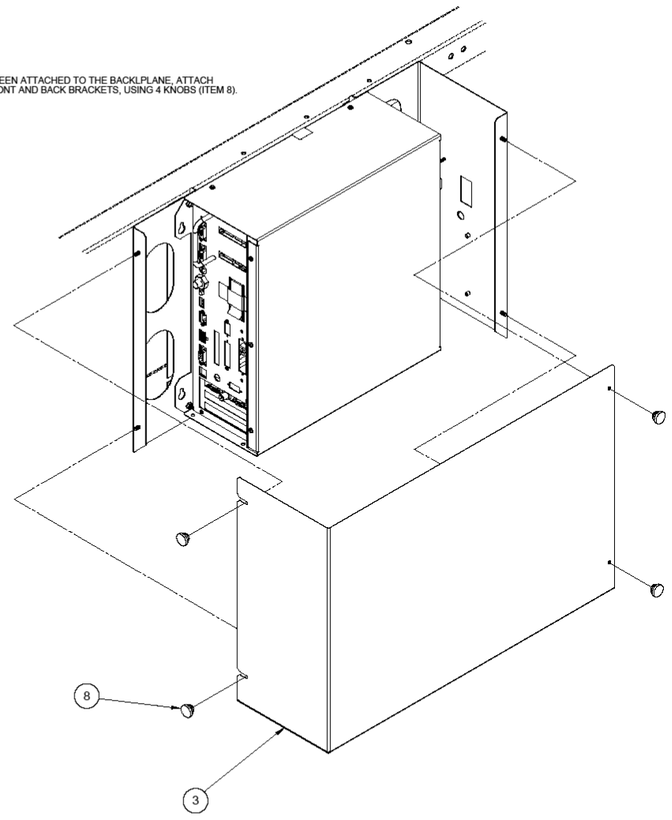
INSTALLATION STEP 2:

- SECURE CPU TO 2 STUDS ON THE FRONT AND BACK XL BRACKETS BY 2 NUTS (ITEM 6).
- USING 2 PHIL SCREWS (ITEM 7) AND 2 NUT (ITEM 6) TO SECURE THE CPU ONTO BOTTOM HOLES OF FRONT AND BACK XL BRACKETS.



INSTALLATION STEP 3:

ONCE ENTIRE ASSEMBLY HAS BEEN ATTACHED TO THE BACKLPLANE, ATTACH THE COVER (ITEM 3) TO THE FRONT AND BACK BRACKETS, USING 4 KNOBS (ITEM 8).



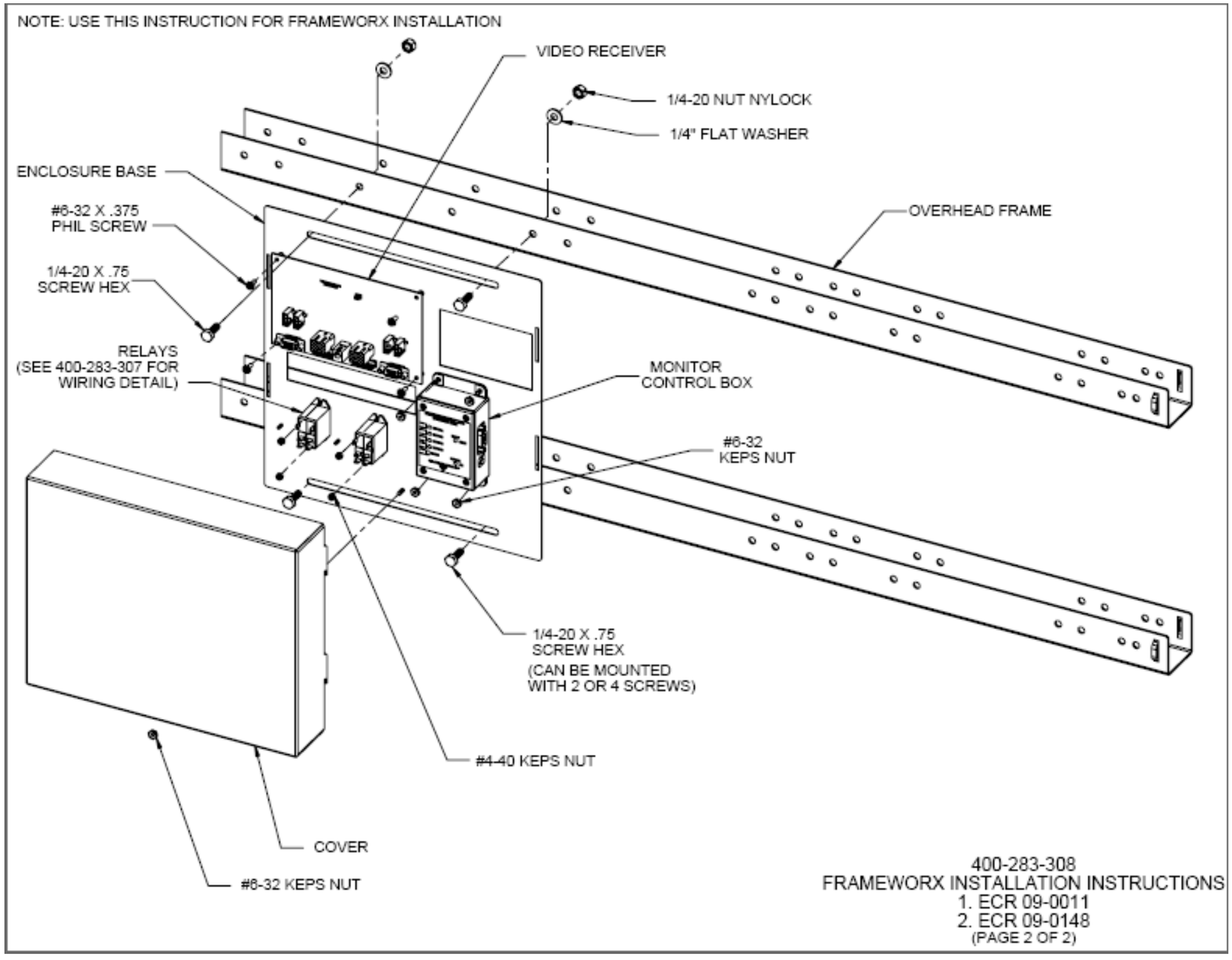
ITEM	QTY.	PART NUMBER	DESCRIPTION
9	1	843-127-002	#6-32 KEPS NUT
8	4	713-504-013	KNOB #10-24 BLACK PLASTIC WITH INSERT
7	2	818-233-082	#8-32 X 1/2 PAN HD SCREW PHIL. SEMS
6	4	843-133-002	#8-32 KEPS NUT
5	4	951-148-002	1/4 SPLIT LOCK WASHER
4	4	01-044	1/4-20 X 5/8 HEX CAP SCREW, ZINC
3	1	283-200-086	COVER XL ENCLOSURE
2	1	283-200-084	BACK XL BRACKET
1	1	283-200-083	FRONT XL BRACKET

NOTICE: QubicaAMF CONFIDENTIAL INFORMATION THIS DRAWING AND ALL INFORMATION CONTAINS CONFIDENTIAL INFORMATION OF QubicaAMF. THIS DOCUMENT MAY NOT BE COPIED NOR THE INFORMATION USED OR DISCLOSED EXCEPT AS QubicaAMF FIRST AUTHORIZED BY WRITING. BY ACCEPTANCE OF THIS DRAWING BY A VENDOR, INDICATES VENDOR'S AGREEMENT TO RECEIVE SUCH INFORMATION IN CONFIDENCE, TO NOT DISCLOSE IT AND TO USE IT ONLY ON BEHALF OF QubicaAMF.

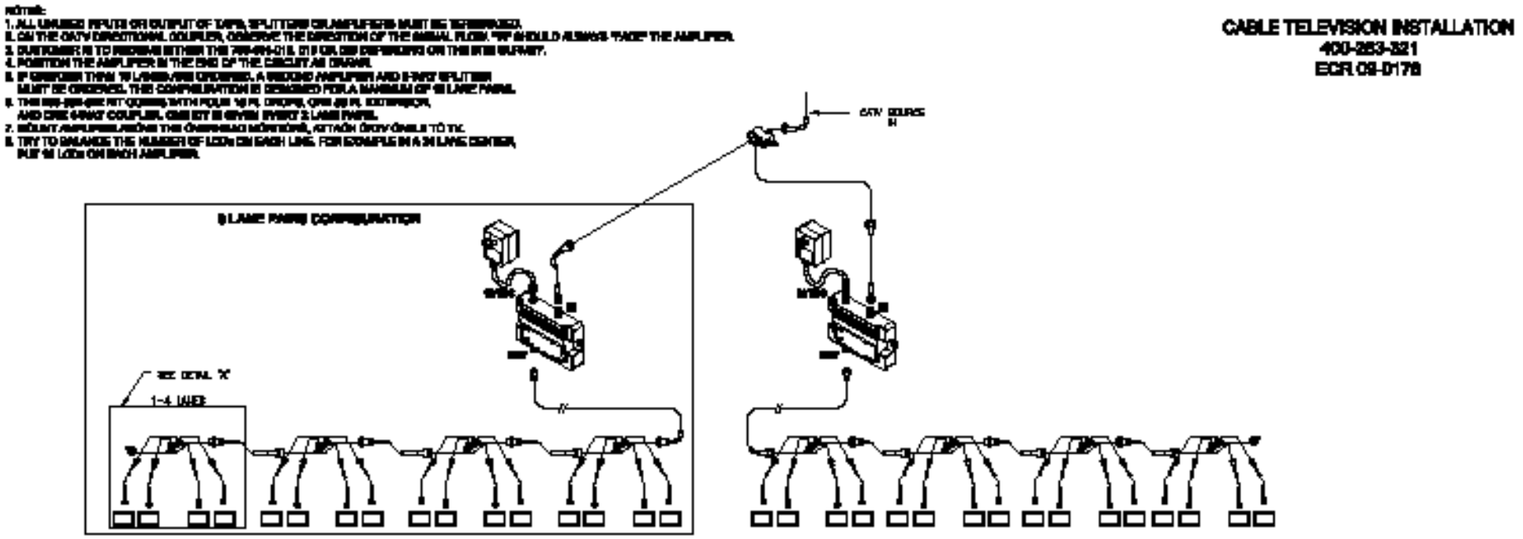
ENG APP	-	-	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	DESCRIPTION: XL-BOSS ENCLOSURE
CHECKED	-	-	GENERAL TOLERANCES: XX ±, XXX ±, ∠ ±	SIZE: D; PART NUMBER: 283-200-070; REV: A
DRAWN BY	NS	07/21/08		

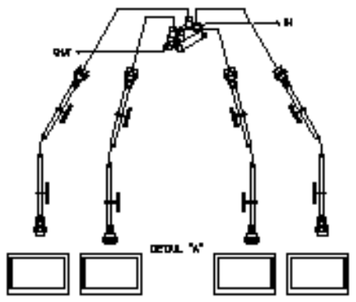
INTERPRET DRAWING IN ACCORDANCE WITH ASME Y14.5M-1994 — THIRD ANGLE PROJECTION — QUBICAAMF — ELECTRONIC DOCUMENT DO NOT SCALE THIS DRAWING — SHEET: 1 OF 1 — REV D

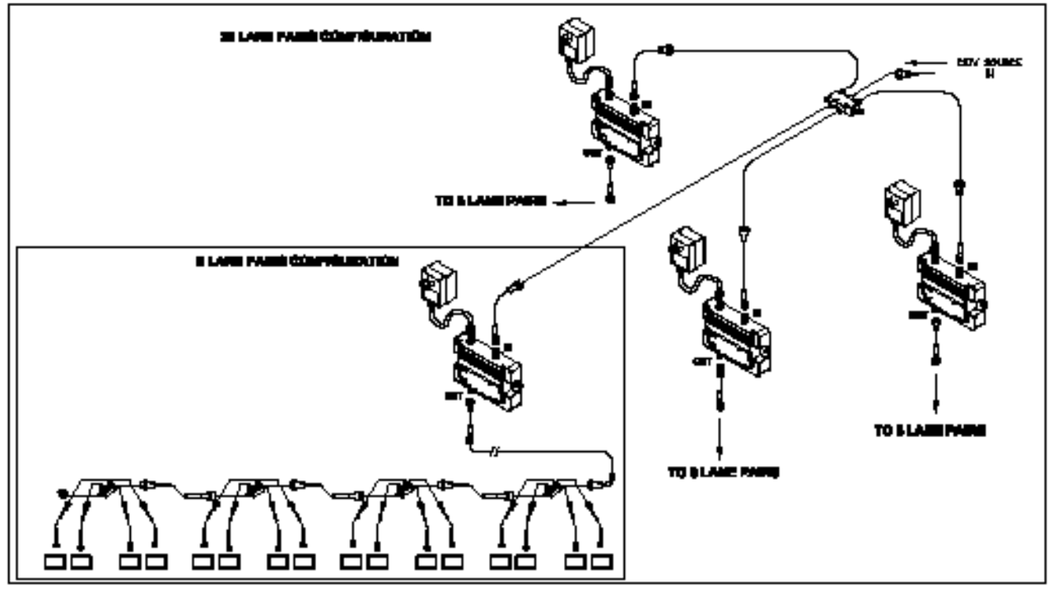
4.11 Assemble Frameworx Enclosure



4.12 Enhanced TV Cable Installation







5 Component Identification

5.1 LCI S-Video Interface

Many of the Aftermarket LCD upgrade packages utilize an S-Video interface. If your package includes this interface, refer to the pictures on this page and also ***Section 7 – Making the Right Connections*** for hookup assistance.

Figure 3 – 283-200-303 Qubica VDB Connections

Figure 4 – 283-200-301 AccuScore Plus Connections

Figure 5 – 283-200-302 Frameworx Connections

5.1.1 Ferrite Filter Installation

One or two ferrite filter(s) (283-200-209) is/are supplied on systems requiring the S-video interface (Qubica VDB 283-200-303 and AccuScore Plus 283-200-301).

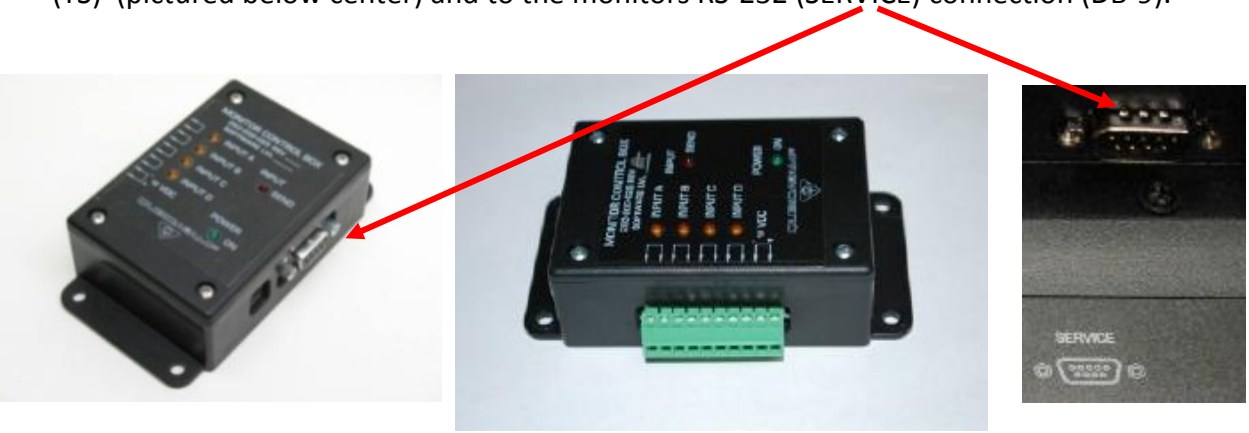
For the Qubica VDB system, 2 filters are provided for each of the RGB to LCI cables (283-200-176). They must be used as shown in the picture at right. Note that the cable is wrapped around the filter two times.

For the Accuscore Plus system, one filter is provided for use on the S-Video interface power input cable. Note that the cable is wrapped around the filter two times.

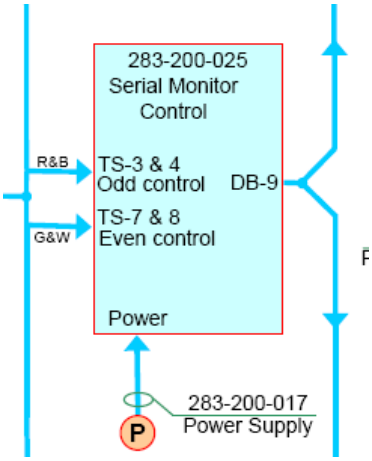
Please note that no filter is required on the power input cable for the Qubica VDB S-video interface (283-200-303).

5.2 Serial Monitor Control Box

The Serial Monitor Control Box is used in cases where the scoring system provides control of TV (Ads) function. Connections are made from scoring control to the green terminal strip (TS) (pictured below center) and to the monitors RS-232 (SERVICE) connection (DB-9).



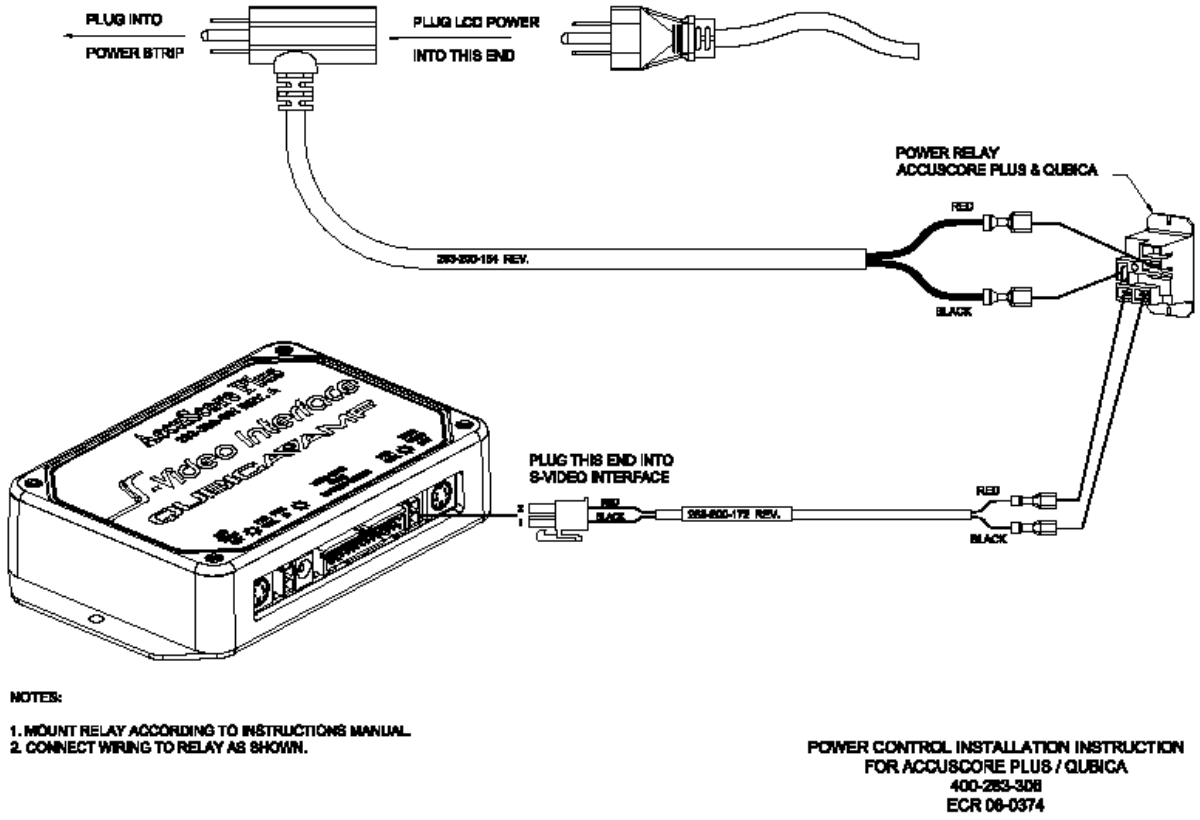
At right is a portion of drawing 400-283-302-05, showing the connections to the serial monitor control box. In this configuration, connections are made with a 4 conductor cable (red, black, green and white) to the terminal strip connections TS-3 & 4 and TS 7 & 8. In addition to these connections, there is a DB-9 cable that splits out to each monitor and attaches to the serial connector of the monitor (labeled ***SERVICE***).



6 Detailed Wiring Instructions

6.1 Power Control Accuscore +/ Qubica

The power plug for the monitor is connected to the power relay cable (283-200-154), which in turn is connected to the power outlet strip (283-200-019). The power control cable (283-200-172) is connected at the S-Video Interface box and the monitor power relay (283-200-153).



6.2 Power Off with Conqueror

If you have QubicaAMF scoring there is a CD included (400-283-317) that will install files on your system to enable the LCD's to power off completely. Insert this CD in your Conqueror computer and follow the prompts. This process puts an advertising file on your system and subsequently displays a help file. Follow the instructions in setting up your system to enable Conqueror to shut down your monitors.

6.3 Brunswick Frameworx® Enhanced TV

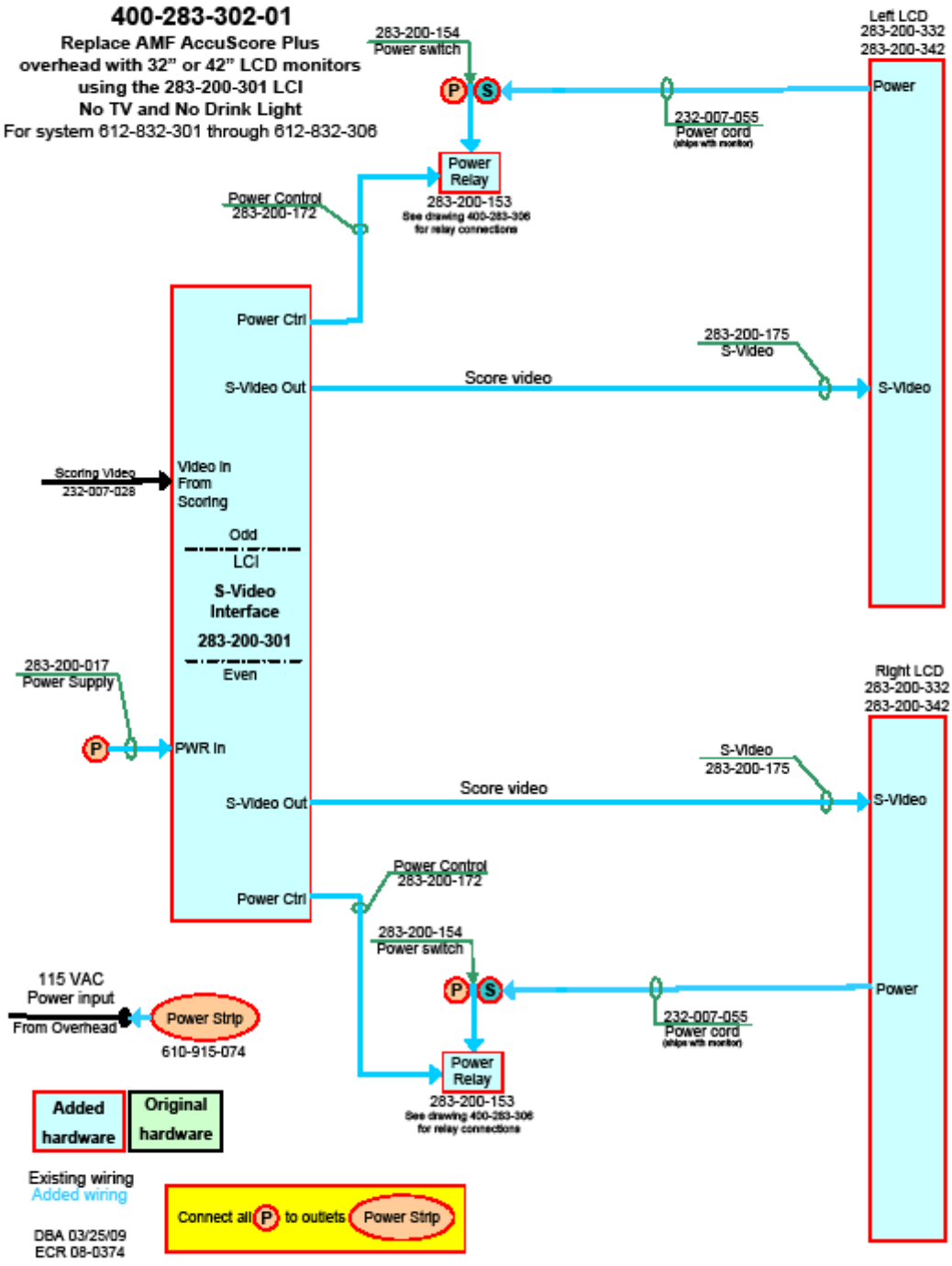
In order for Enhanced TV to work with your Brunswick Frameworx® system, you will need to install a Sync Generator Board (283-200-130) in each lane group processor. Make sure you isolate this board from any metallic objects or other circuitry (wire ties are provided with all scoring installation kits).

7 Making the Right Connections

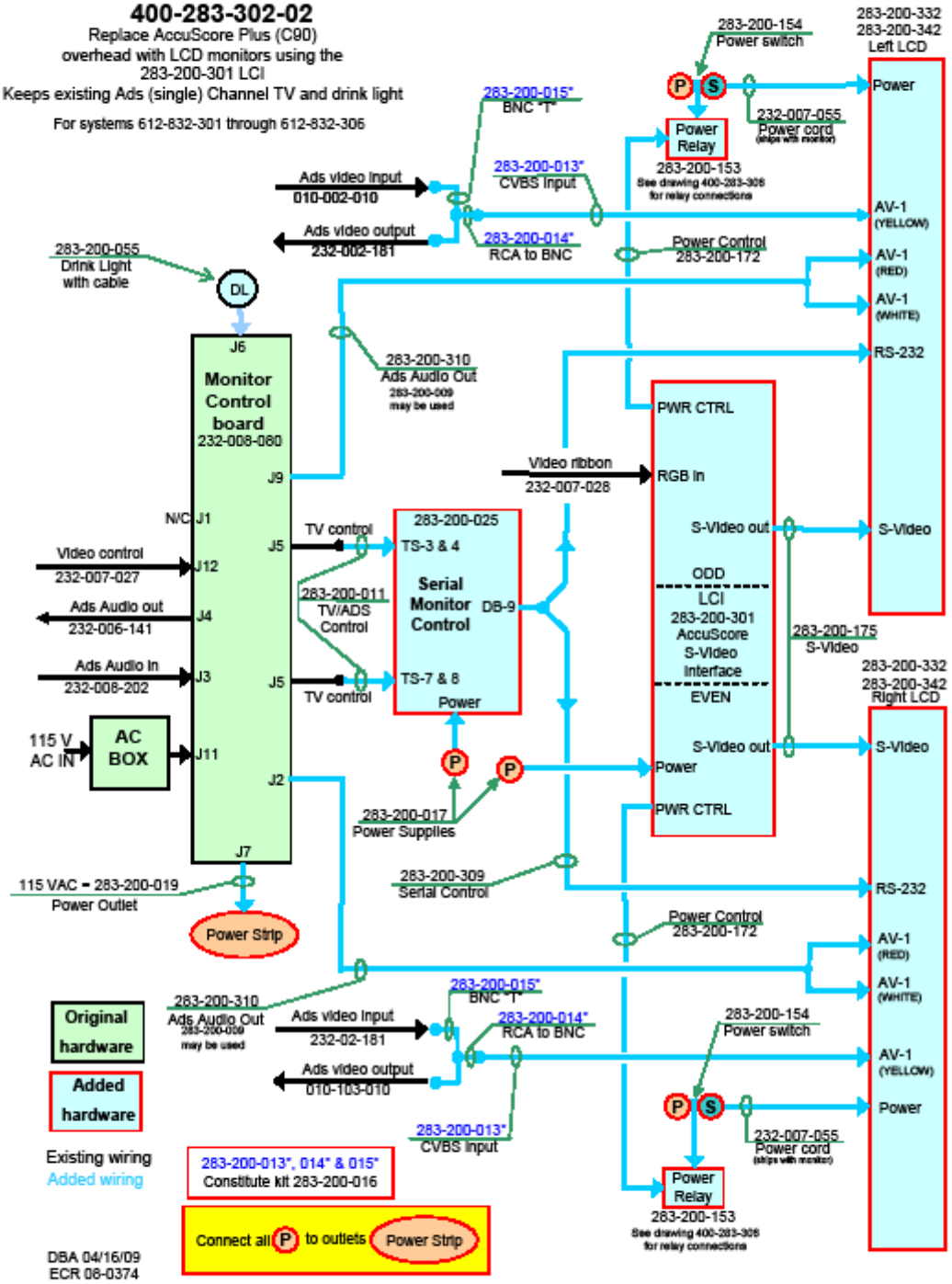
Please select the correct diagram for your application. You will use this diagram as it applies to the options you have purchased to assist you in connecting your LCD properly.

Section	Drawing Number	Heading Title	Drawing Description	Page
7.1	400-283-302-01	Accuscore Plus No TV / No Drink Light	Replace AMF Accuscore Plus overhead with 32” or 42” LCD monitors using the 283-200-301 LCI. No TV and No Drink Light	32
7.2	400-283-302-02	Accuscore Plus (C-90) Existing Ads Channel TV	Replace Accuscore Plus (C90) overhead with LCD monitors using the 283-200-301 LCI. Keeps existing Ads (single channel) TV and drink light	33
7.3	400-283-302-03	Accuscore Plus (C-90) Enhanced TV and Drink Light	Replace Accuscore Plus (C90) overhead with LCD monitors using the 283-200-301 LCI interface. Provides Enhanced TV (different channel per lane) and Drink Light	34
7.4	400-283-302-04	Accuscore Plus (Spectrum) No TV	Replace Accuscore Spectrum overheads with LCD monitors using the 283-200-301 LCI No TV	35
7.5	400-283-302-05	Accuscore Plus (Spectrum) Existing Ads Channel TV	Replace Accuscore Spectrum overheads with LCD monitors using the 283-200-301 LCI Maintains Ads TV (single channel) per center	36
7.6	400-283-302-06	Accuscore Plus (Spectrum) Enhanced TV	Replace Accuscore Spectrum overhead with LCD monitors using the 283-200-301 LCI Provides Enhanced TV for a different channel per lane	37
7.7	400-283-304-01	Qubica RGB Enhanced TV	Replace Qubica RGB overhead monitors with 32” or 42” LCD using the 283-200-303 LCI. Provides Enhanced TV allowing a different channel for each lane	38
7.8	400-283-304-02	Qubica RGB Maintain Existing TV	Replace Qubica RGB overhead monitors with 32” or 42” LCD using the 283-200-303 LCI. No TV or maintains existing	39
7.9	400-283-304-03	Qubica RGB No TV or Scoring Audio	Replace Qubica RGB overhead monitors with 32” or 42” LCD using the 293-200-303 LCI. No TV or Scoring Audio	40
7.10	400-283-304-04	Qubica S-Video No Monitor Power Control	Replace Qubica S-Video overhead monitors with 32” or 42” LCD with or without Enhanced TV. No monitor Power Control	41
7.11	400-283-304-05	Qubica S-Video No Sound No TV Power Control	Replace Qubica S-Video overhead monitors with 32” or 42” LCD with No Sound or TV Power Control	42
7.12	400-283-318-01	Brunswick Frameworx®	Replace Brunswick Frameworx® overhead with 32” or 42” LCD using 283-200-118 Video Receiver. Enhanced TV option	43

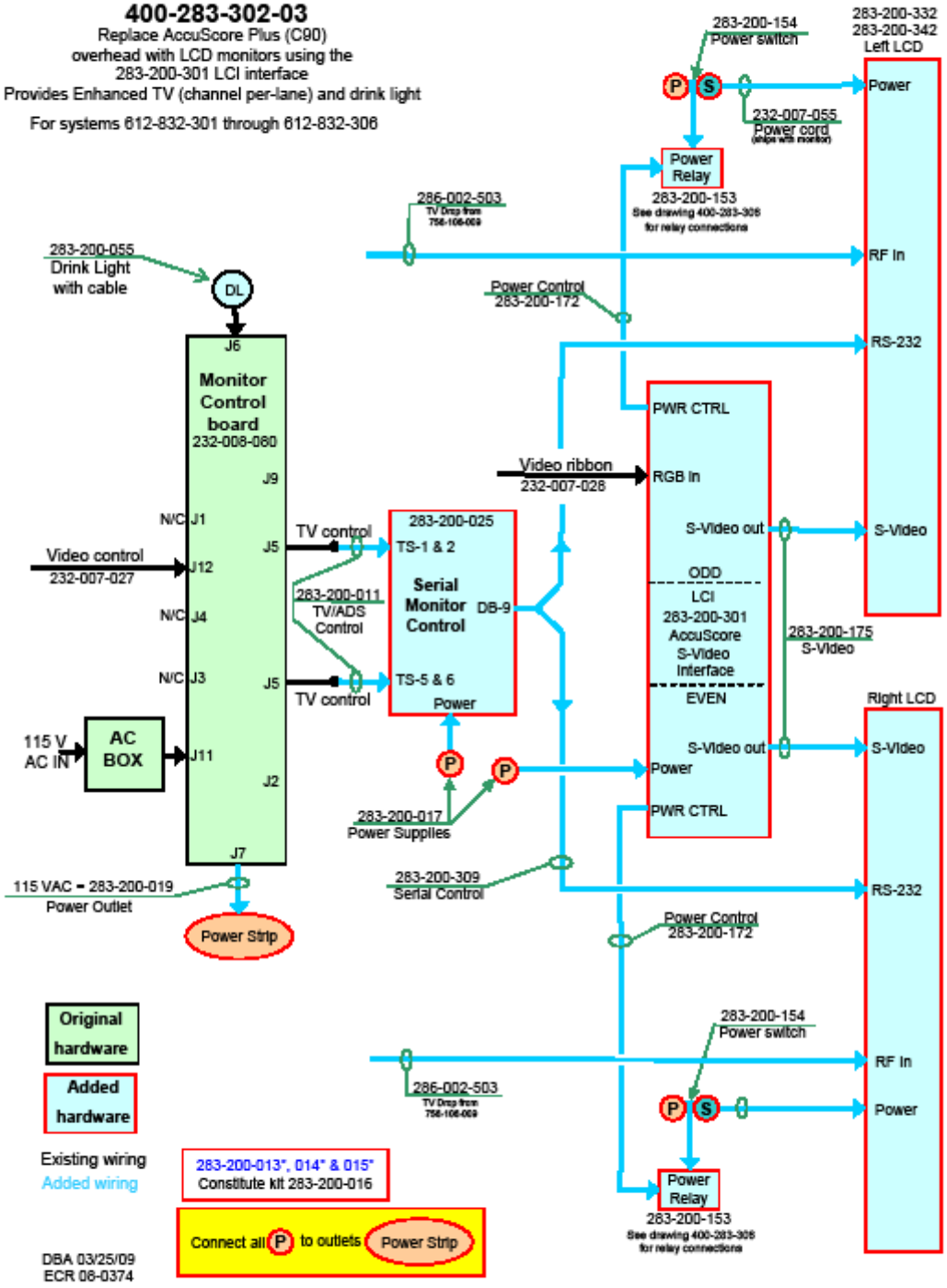
7.1 Accuscore Plus No TV / No Drink Light



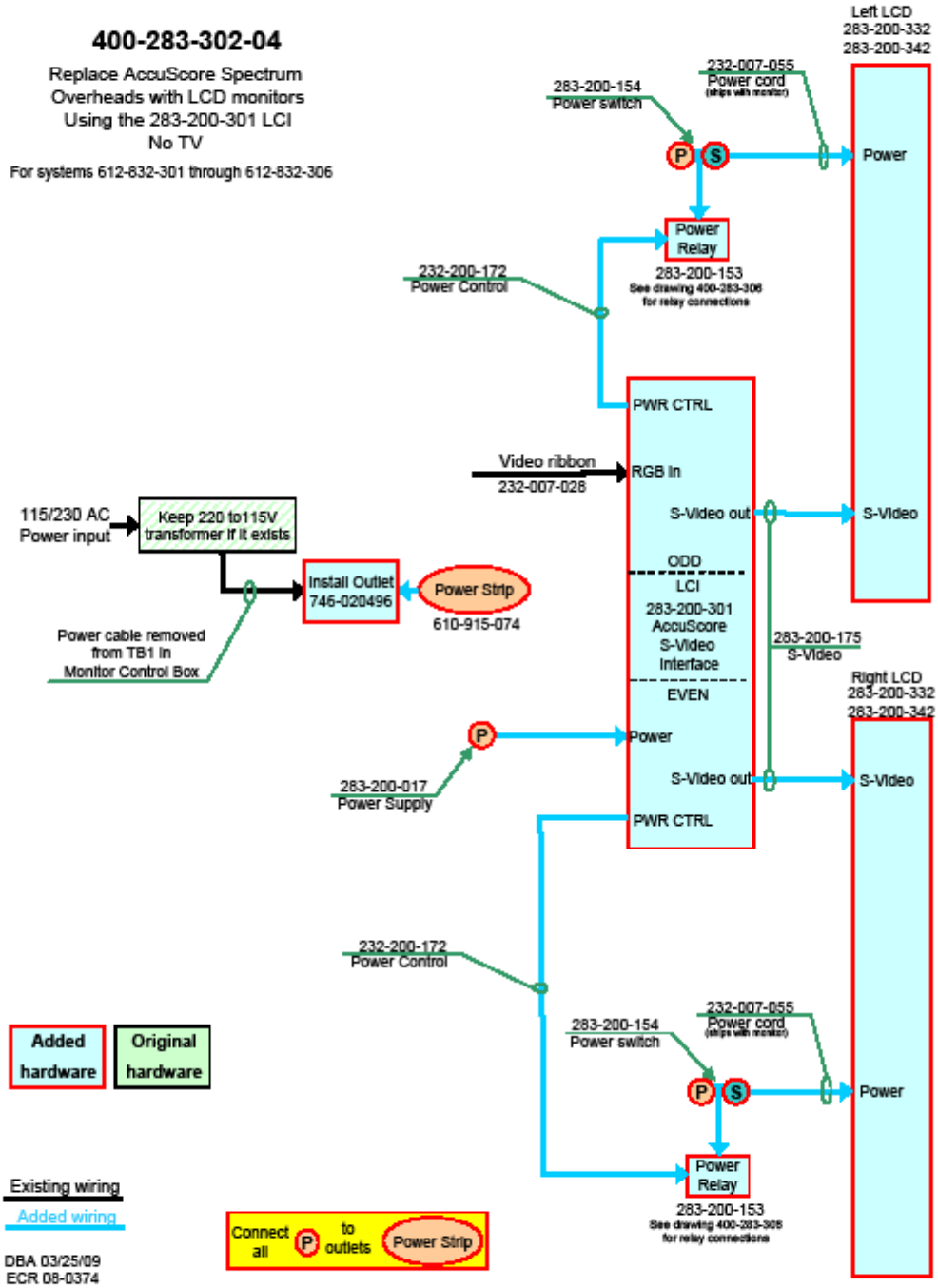
7.2 AccuScore Plus (C-90) Existing Ads Channel TV



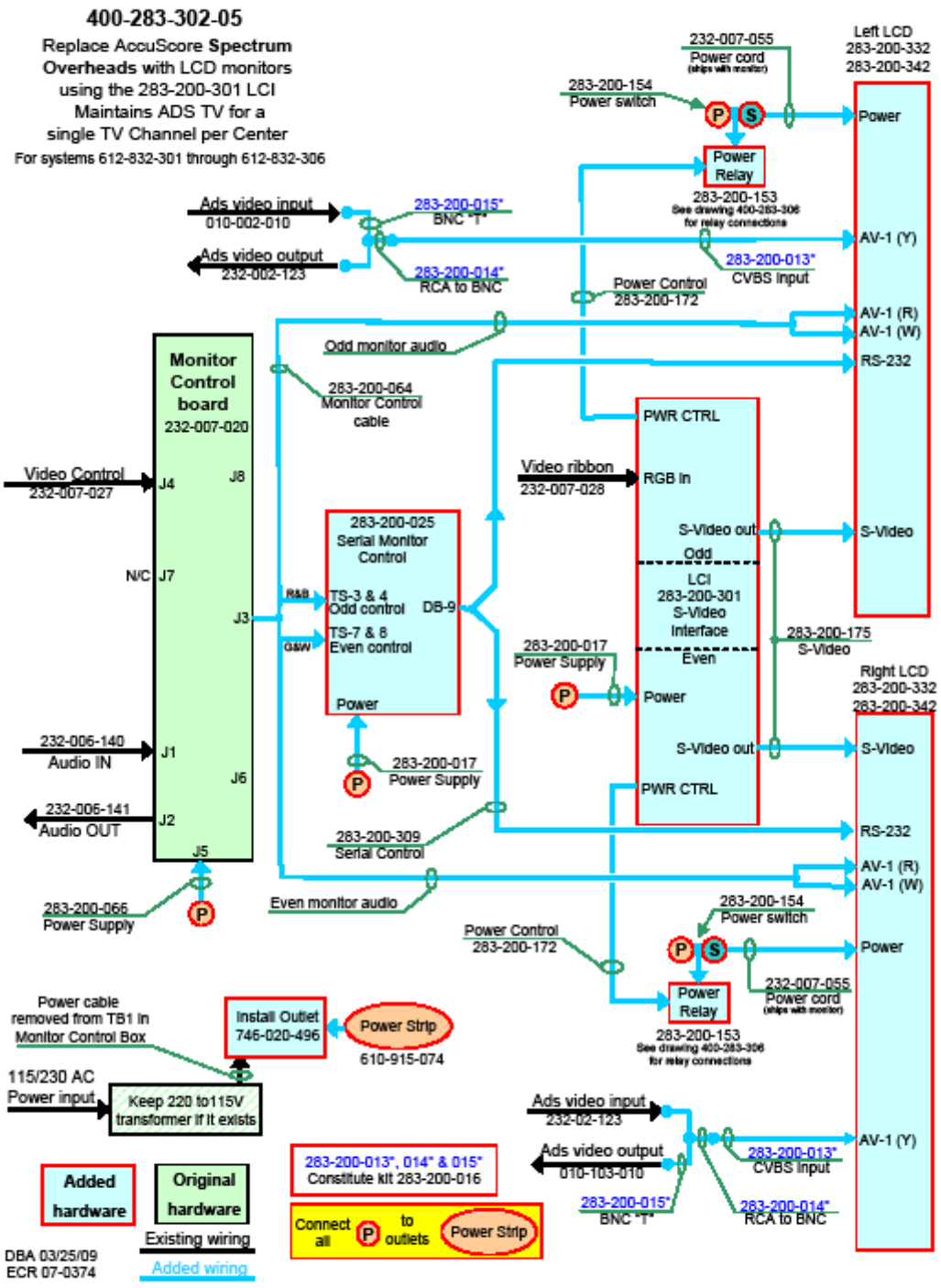
7.3 Accuscore Plus (C-90) Enhanced TV and Drink Light



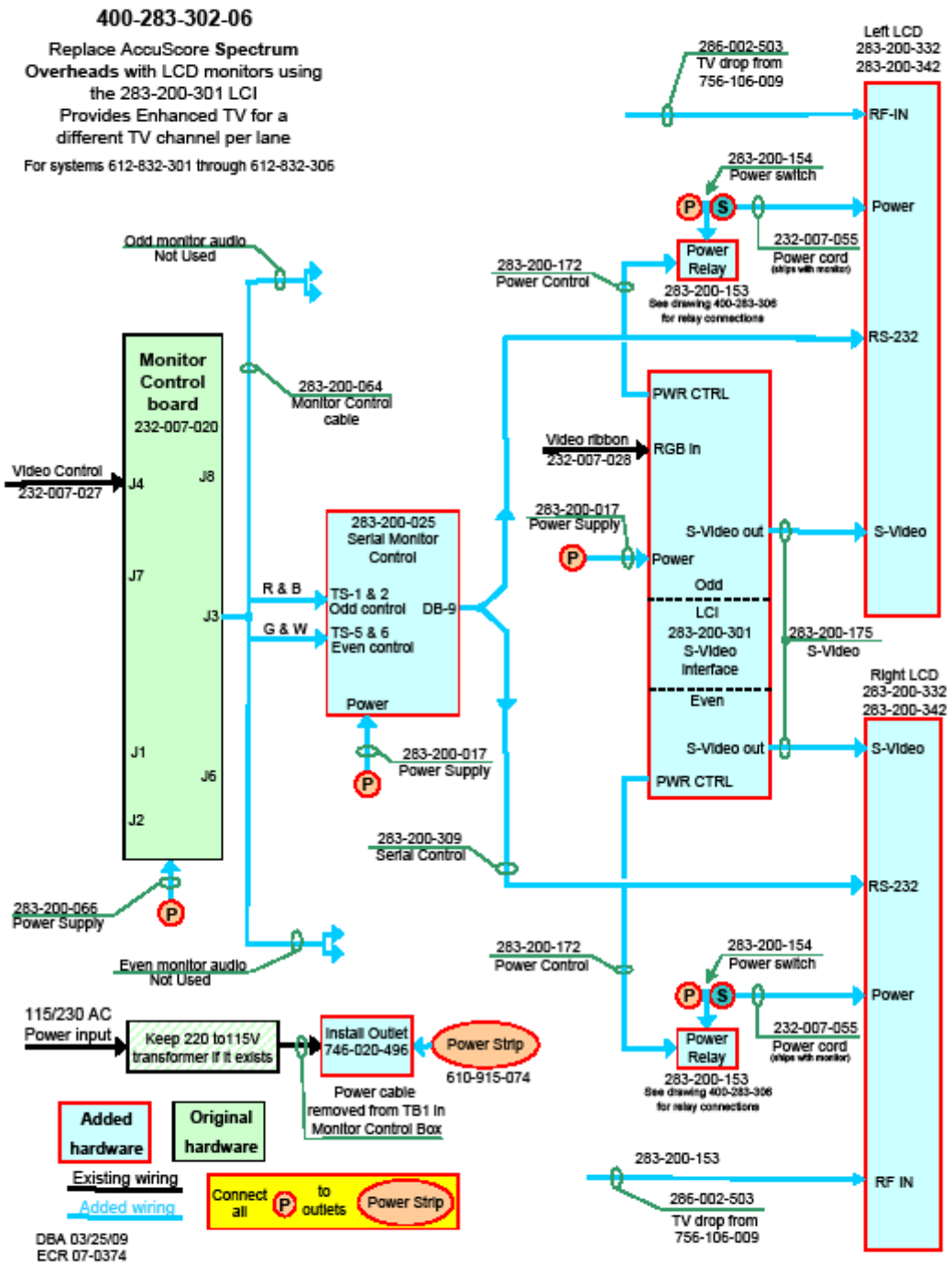
7.4 Accuscore Plus (Spectrum) No TV



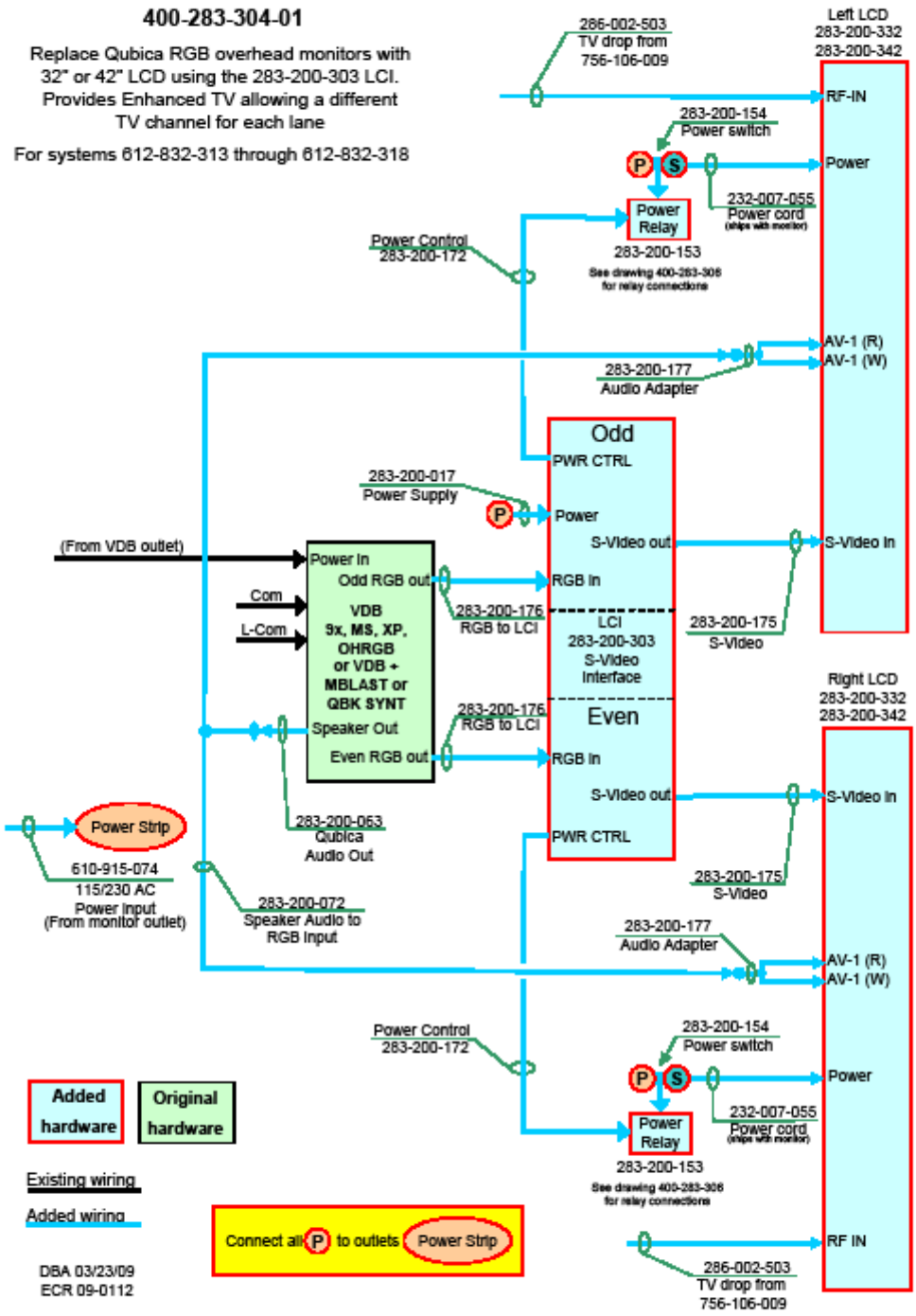
7.5 Accuscore Plus (Spectrum) Existing Ads Channel TV



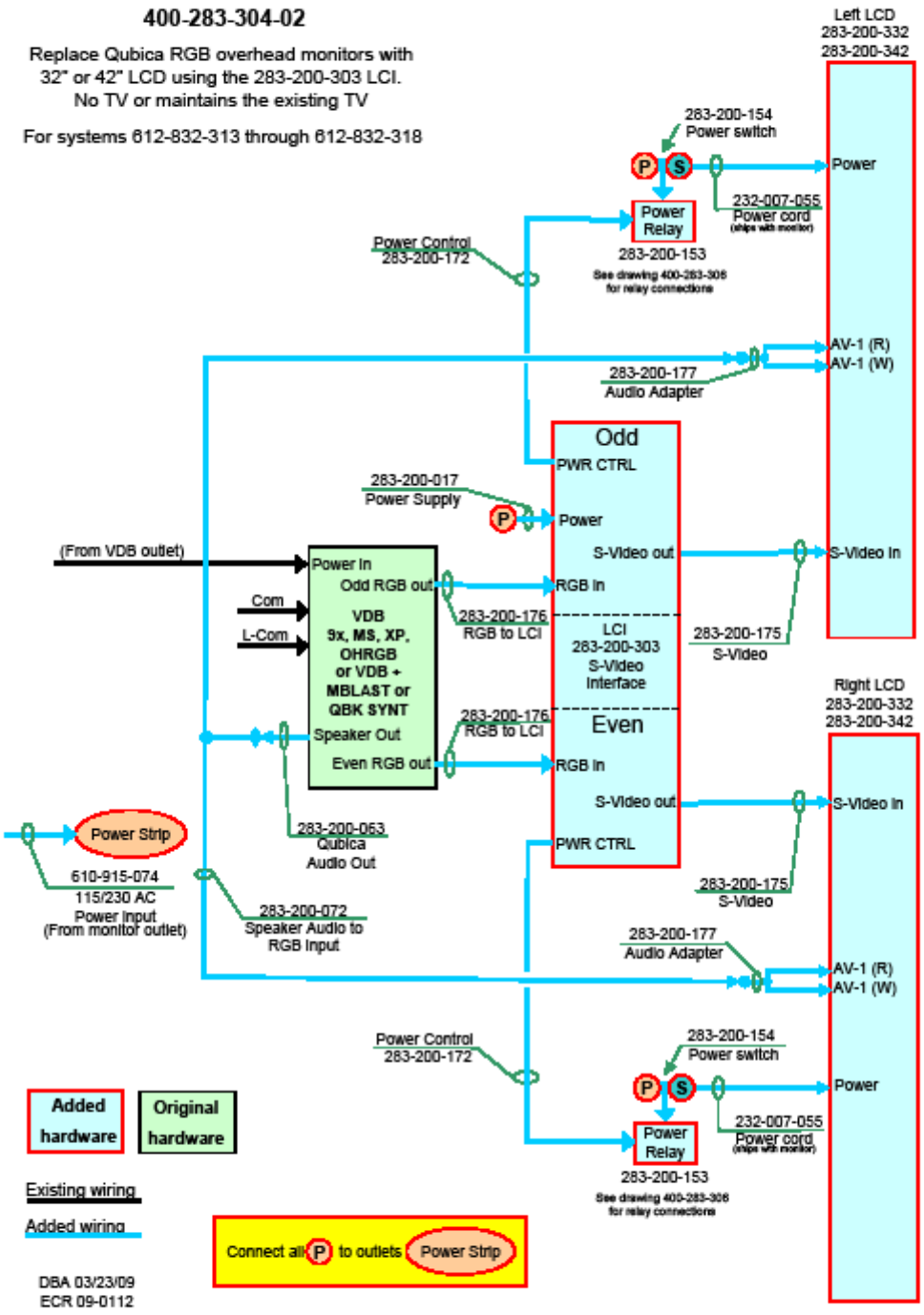
7.6 Accuscore Plus (Spectrum) Enhanced TV



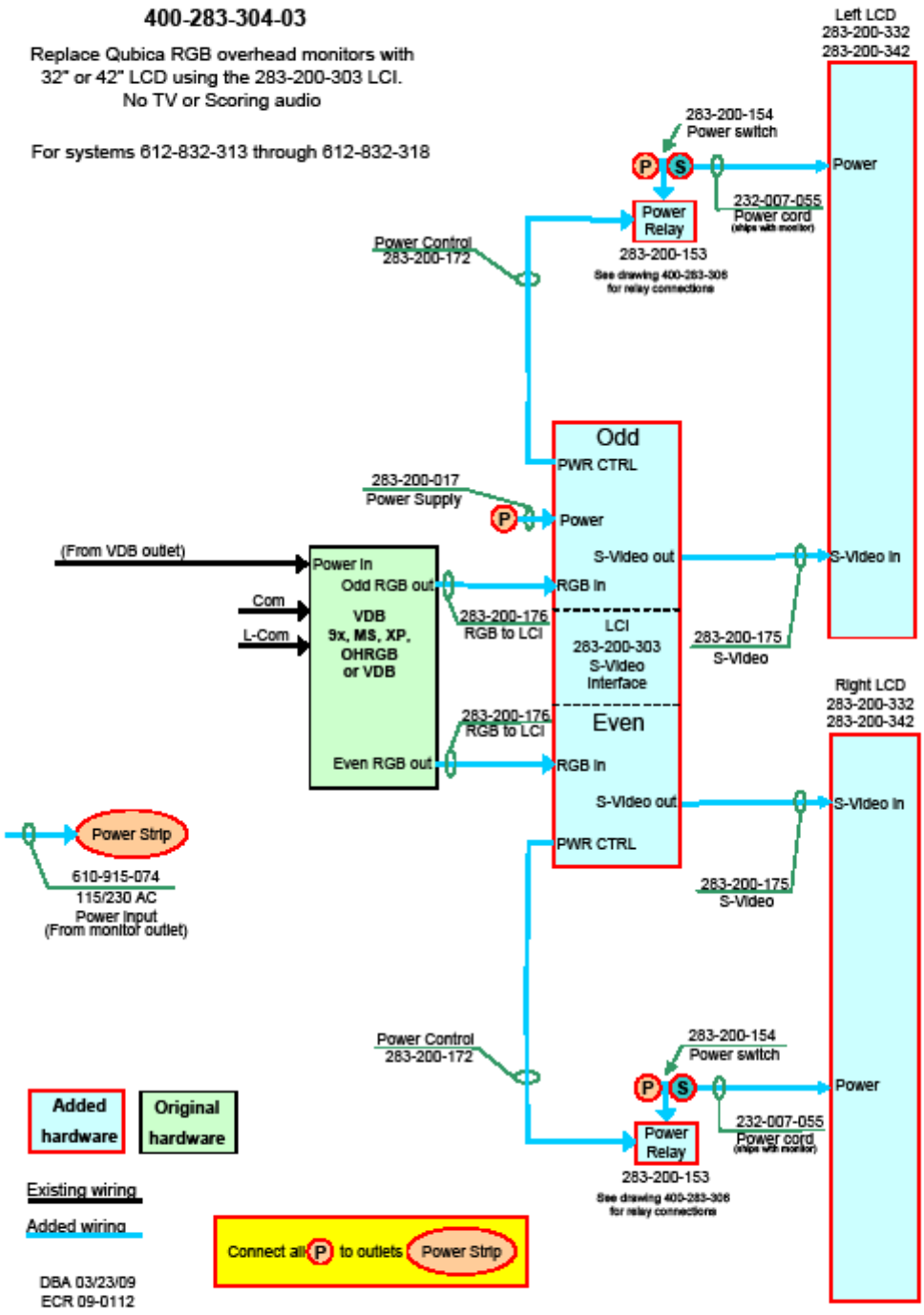
7.7 Qubica RGB Enhanced TV



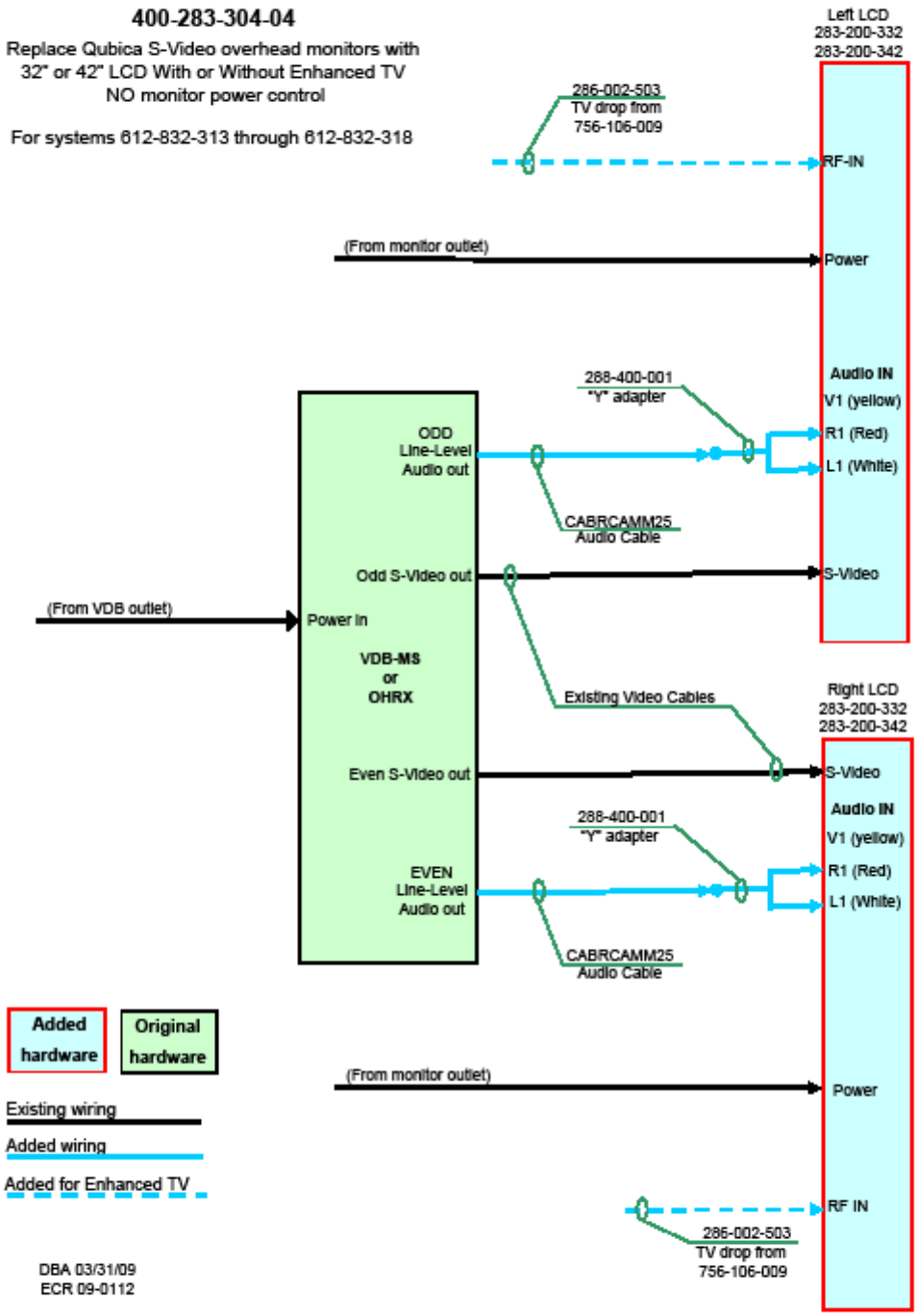
7.8 Qubica RGB Maintain Existing TV



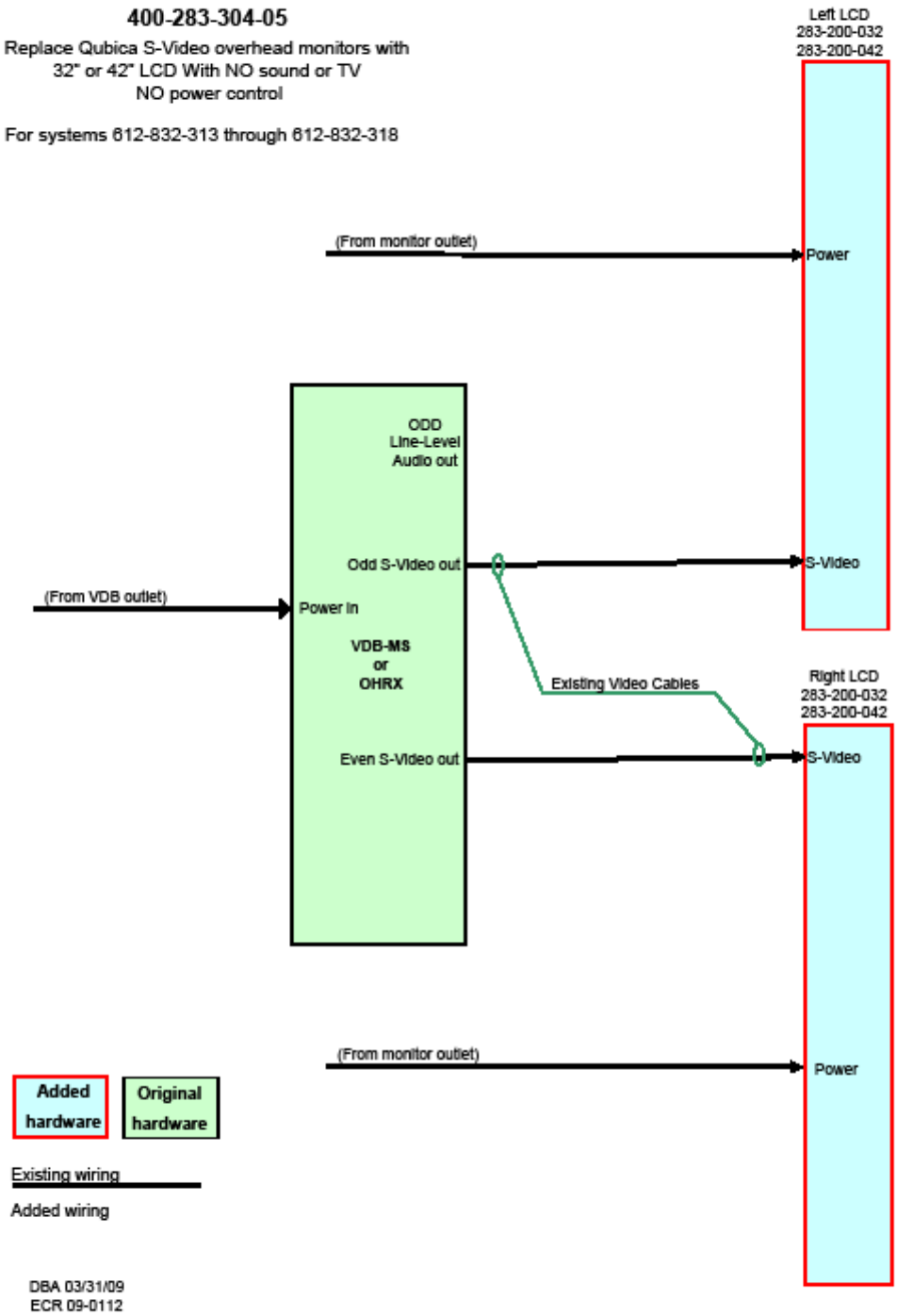
7.9 Qubica RGB No TV or Scoring Audio



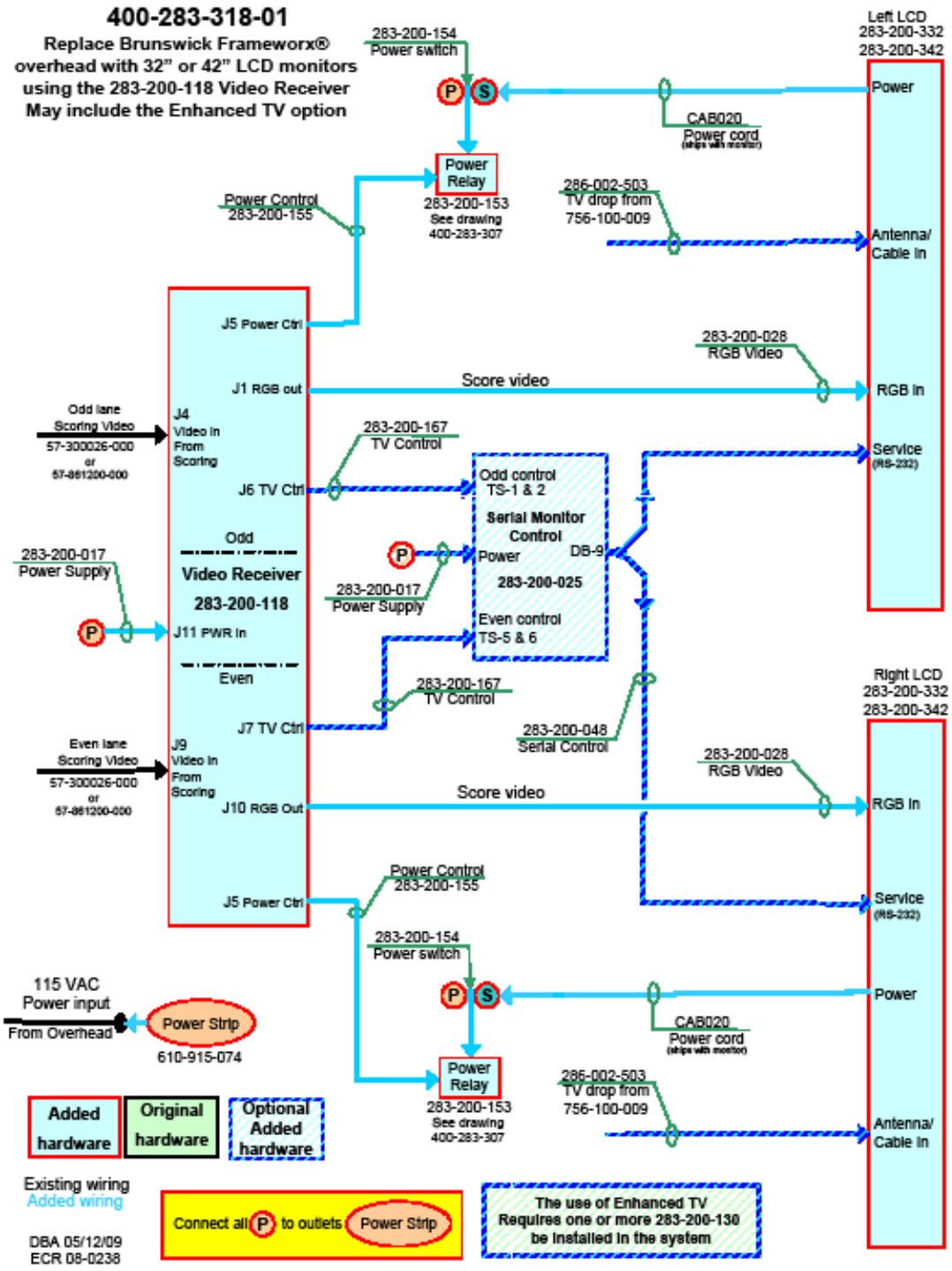
7.10 Qubica S-Video No Monitor Power Control



7.11 Qubica S-Video No Sound No TV Power



7.12 Brunswick Frameworx®



8 Power Up & Verify Operation

Before applying power, double check all connections. Turn on your scoring chassis, the breaker on overhead and the power strip. The LCD will display a blue power light if the LCD has power but has not been turned on. When powering up, the LCD will display the Qubica logo screen. Once the logo has turned off, press the <**POWER**> button on the supplied remote (or on the front of the monitor). Press the <**SOURCE**> button on the remote to select the correct monitor input for your scoring system.

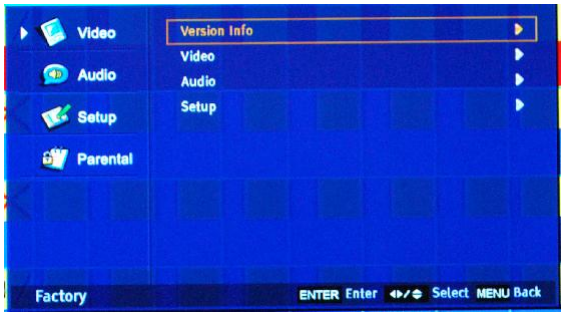
8.1 LCD Screen Adjustments

If your display needs sizing and/or horizontal or vertical adjustment, follow these instructions. Please note that adjusting the monitor depends on how your monitor connects to your scoring system. Follow the instructions specific to your setup (S-Video or RGB).

8.1.1 S-Video

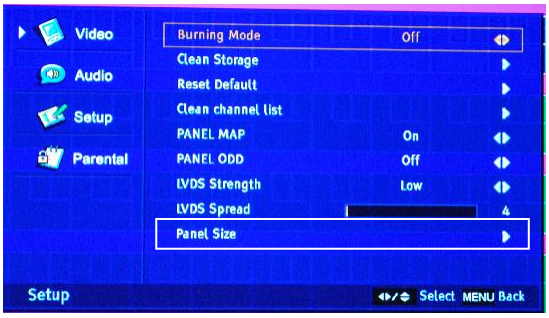
1. Bring a scorer online and make sure your display shows at least 4 or 5 bowlers in your normal grid configuration. Go to the Main Menu by pressing the <**MENU**> button on the remote.

2. Once at the menu above, enter the numbers <**5380**> which will bring up this menu.



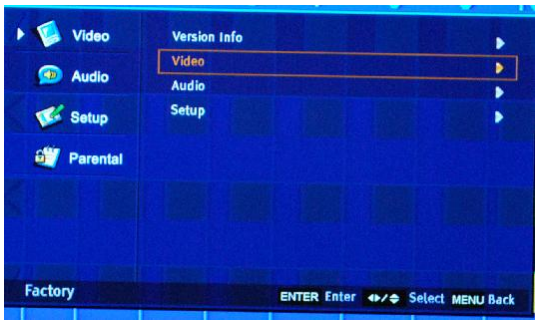
3. Scroll down to Setup and press the right arrow button.

4. Go down to the Panel Size option and press the right arrow button.



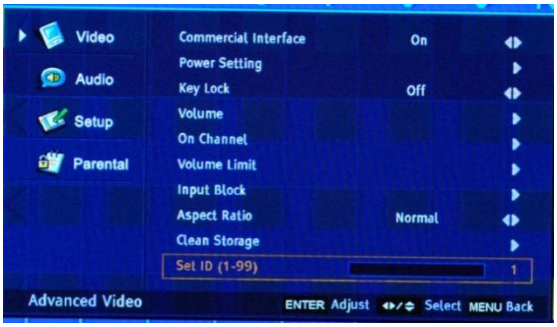
5. This will bring up the screen at right. Here you will adjust the horizontal and vertical sizing using the appropriate control. Please note that if your scorer connects to the VGA connection of the monitor, these adjustments will not affect your display.

6. Once you have adjusted the image for optimum sizing, return to the second menu by pressing <**MENU**> twice, then go to the Video option.



7. You should now see this screen. Here you will adjust the centering of the image using the H. Position and V. Position controls. With an S-Video connection, it may be necessary to go back and forth between this step and step 5 a few times to achieve optimal results.

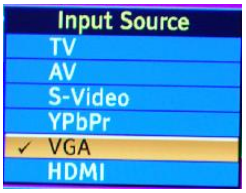
8. Once you have satisfactorily setup the screen for size and centering, go back to the first menu and enter **9632**. If you have QubicaAMF scoring, you will need to make sure the option at the bottom of this screen (Set ID), is set to 1.



9. Once you have completed these adjustments, go to 8.1.3 Common Adjustments.

8.1.2 VGA (RGB)

1. Make sure your monitor is in VGA mode (Press the <**SOURCE**> button and select VGA).



2. Bring the scorer online and make sure your display shows at least 4 or 5 bowlers in your normal grid configuration. Go to the Main Menu by pressing the <**MENU**> button on the remote.

3. Scroll down to VGA then press the right arrow button.

4. This will take you to the screen at right. The first thing you should do is select Auto Adjust. This should give you a good starting point. If further adjustments are required, use the H. Position, V. Position, Phase and Clock adjustments.

5. If you are experiencing “tearing” on the top of your screen (in VGA mode) you may need to adjust the coast start and coast end. Please follow the directions in section 8.1.1 (steps 1 & 2) to get to this screen. At the Video option, press the right arrow.

Make note of what the values are for both of these settings as it is possible to over adjust them which may result in a loss of the display. If this occurs, reset the values to what they were prior to any changes. You may need to reset the display by selecting another input source (select S-Video then go back to VGA).

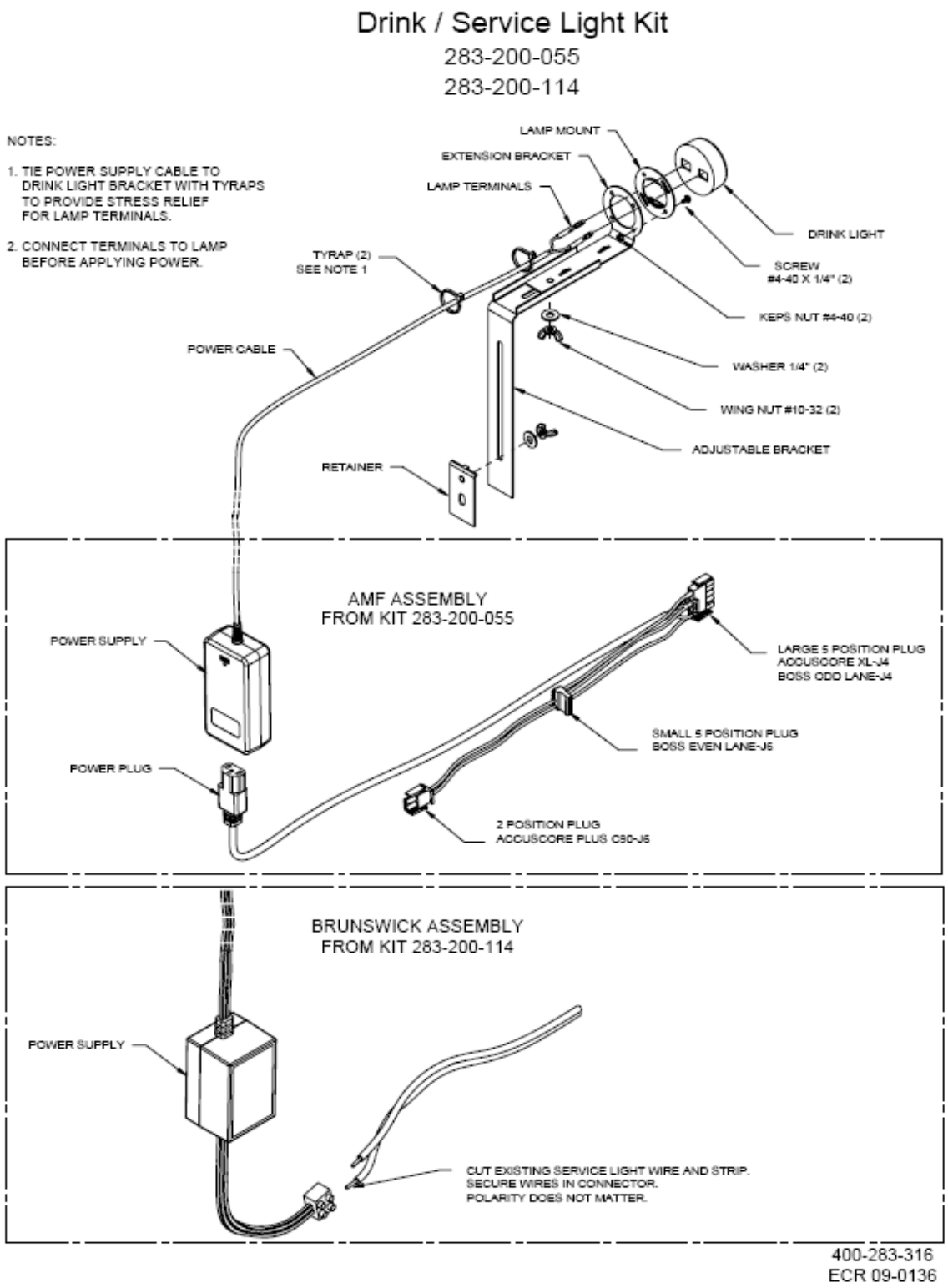
8.1.3 Common Adjustments

The screen at right is found when you have selected the Power Setting option (see picture for S-Video *section 8.1.1 step 8*).

Set *Power On Mode* to **Last** and *Auto Power Off* to **Off**.

This completes the necessary adjustments for your new monitors and your scoring system. If any other adjustments are required, please refer to the manual supplied with your monitors, or call QubicaAMF Technical Support at 866-460-QAMF (7263).

9 Drink Light



10 Troubleshooting

LCD Issues	Possible Problem	Corrective Action
No picture on LCD	Verify the Power light is on for all components. The LCD's and Monitor Control Box (if present) have a power indicator.	Make certain the main disconnect has been turned on. Verify the power strip has power and that all items have been plugged in to the power strip.
No picture on odd channel. Error message "No Signal" or "Not Supported"	Flexscore CPU must have the video config set to 75.	Go to Main Menu of Flexscore CPU and edit Video Config (19). Change refresh setting from 60 to 75. Save setting and reboot CPU.
Unable to get a score grid	LCD is on, but picture from Accuscore is not displayed.	Make certain the CWCs are on.
	Correct source has not been selected.	From the LCD remote, depress the <**SOURCE**> key and select *S-Video* or *VGA*
VGA Display – Top of screen jittering	Adjustment necessary	Adjust Coast Start/End Values
Monitor Turns off by itself	Going into Auto Power-off	See section 8.1.3 – Common Adjustments
Scorer Grid cutoff or not centered on screen	Adjustment necessary	See adjustment section for your monitor hookup. 8.1.1 for S-Video or 8.1.2 for RGB (VGA)

Hanger Issues	Possible Problem	Corrective Action
Gap between LCDs is too great.	Monitors not centered	Move mounting plate on LCD.
Monitors appear crooked	Hangers brackets not mounted equally	Adjust hangers